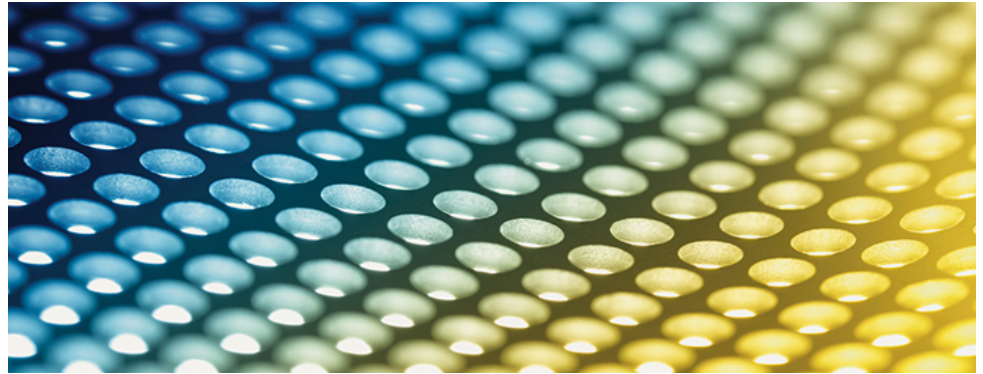


## ALUPRINT® 3R



Aluprint® 3R is a specially formulated printing ink series that contains dyestuffs that are easily adsorbed into anodized aluminum. By combining the physical properties of anodized aluminum with the Aluprint® printing pastes simple one-color printed labels and up-to multi-colored nameplates can be produced.

The colored surface produced by this technique is

- PERMANENT
- DURABLE
- ABRASION RESISTANT
- WEAR RESISTANT
- LIGHT FAST

and is not subject to the constraints which affect items where the color is present as a surface deposit.

## PRODUCT RANGE

- ALUPRINT® YELLOW 3R
- ALUPRINT® RED 3R
- ALUPRINT® TURQUOISE 3R
- ALUPRINT® BLUE 3R
- ALUPRINT® GREEN 3R
- ALUPRINT® BLACK 3R
- ALUPRINT® REDUCER 3R
- ALUPRINT® DILUENT LIQUID

CLARIANT INTERNATIONAL LTD  
Rothausstrasse 61  
4132 Muttenz  
Switzerland

BUSINESS UNIT PIGMENTS  
MARKETING AND SALES PLASTICS  
AND SPECIAL APPLICATIONS

Phone +41 (0)61 469 79 45  
Fax +41 (0)61469 75 40

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## ALUPRINT® 3R PRINTING INKS

These inks are hydrophobic (dislike of aqueous solution). After screen printing and drying, the hydrophobic nature of the residue makes it possible to over-dye with any of the dye solutions prepared from the Sanodal®, Sanodure® and Sanodye® dyes. After finishing, this dried residue has to be cleaned away with suitable organic solvent or Aluprint® Diluent Liquid.

The Aluprint® inks are ready to use directly from the bottle and can be mixed in any ratio to produce an infinite color range.

## ALUPRINT® REDUCER 3R

Aluprint® Reducer 3R is the uncolored printing paste i.e. the finished colored paste minus the dyestuff. It can be mixed with the appropriate colored paste to reduce its color strength and thereby produce pale, pastel shades without altering any other process conditions.

Aluprint® Reducer 3R, because of its hydrophobic nature, can be used as a resist in its own right.

## ALUPRINT® DILUENT LIQUID

Aluprint® Diluent liquid is a combination of the same solvents used in the Aluprint® 3R printing pastes.

This makes it compatible with these inks and is therefore commonly used as a diluent/thinner and as an agent for cleaning screens.

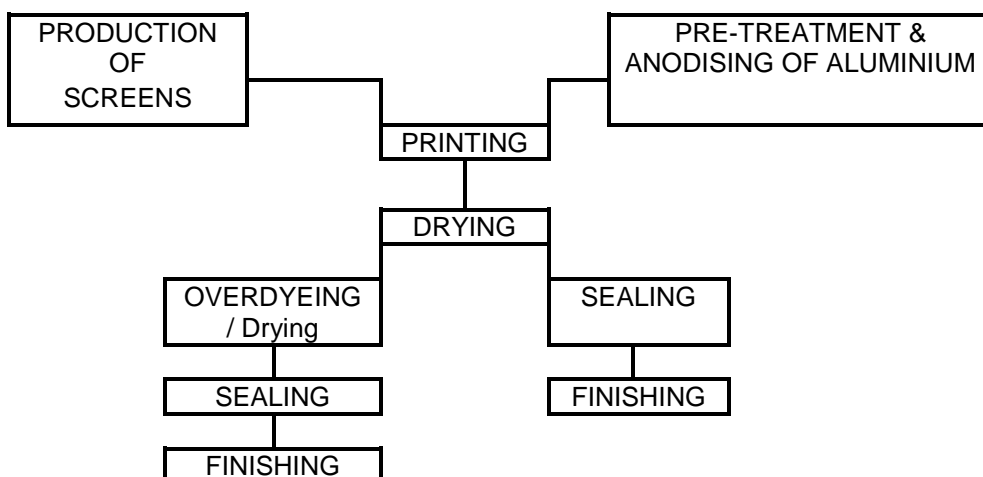
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## PROCESS OUTLINE



## PRODUCTION OF SCREENS

Synthetic gauze is generally selected for use with Aluprint® (polyamide or polyester). As a guide, screen mesh with 80-140 threads per square centimeter can be used depending upon the quality needed of the finished product. However, mesh containing 120 threads per square centimeter is that most commonly found. In general, polyester exhibits greater stability of dimension than polyamide. Stainless steel mesh is sometimes used but tends to be more expensive. Frames can be made from several materials but iron, aluminum and wood are those most commonly found.

There are several types of photo films and photo emulsions. Specific application conditions and suitability for use with Aluprint® should be obtained from the supplier.

## PREPARATION OF ALUMINIUM

### PRE-CLEANING

Degrease in an alkaline cleaning solution at 50-60°C  
Caustic etch if a matte finish required.  
De-smut in a 10-20% solution of nitric acid.

### ANODISING

SULPHURIC CONTENT	200 – 225 G/L
CURRENT DENSITY	1.2 - 1.8 A/DM <sup>2</sup>
TEMPERATURE	18 – 21 °C
TIME	APPROX 30 MIN.
FILM THICKNESS	10 – 12 MICROMETER

### RINSING

Rinse in cold, clean running water for approximately 3 - 5 minutes between all operations.

### DRYING

Careful and even drying of the anodic film is necessary to ensure levelled and even printing. Items should be dried in a dust free environment at room temperature for at 1-2 hours.

### STORAGE

If necessary, the unsealed anodized aluminum sheets can be stored for several weeks provided that the environment is warm and moisture free. Unsealed work should be wrapped in a suitable tissue paper (unbleached and acid free).

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## PRINTING

Normal screen printing techniques are used.

The hardness and shape of the squeegee is important in determining the quality of print. Clear cut prints are more easily obtainable using only one squeegee stroke.

## DRYING

Before any further operations can take place, any printed components must be dried.

Two methods are commonly used:

**AIR DRYING:** 1-2 hours at room temperature is generally sufficient. Deeper shades can be obtained using this method than using following method:

**FORCE DRYING:** Drying can be accelerated by using a warm air fan at a maximum temperature of 50 °C. It is important to note that different drying conditions may lead to varying depths of shade and this should be considered when using mixtures of different Aluprint Inks.

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## OVERDYEING OF ALUPRINT 3R PRINTS

Aluprint® 3R Pastes are hydrophobic (water-resistant) and can therefore be over dyed using the Sanodal®, Sanodure® and Sanodye® dyestuffs without affecting the printed area.

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## SEALING

Usual sealing methods should be used:

- (a) 3 g/L Anodal® SH-1 at pH 5.5-6.0 and temperatures over 96 °C for 3 minutes per micrometer of anodized film thickness (12 µm = 36 minutes).
- (b) 15-20 g/l Anodal® ASL liquid at pH 5.7 ±0.3 and temperatures over 96 °C for 2-3 minutes per micrometer of anodized film thickness (12 µm = 24-36 minutes).
- (c) 15-20 g/l Anodal® ASL liquid for 5 minutes at pH 5.7 ±0.3 and temperature over 75 °C, then followed by a dip in 3 g/L Anodal® SH-1 at pH 5.5-6.0 for 2 minutes per micrometer of anodized film thickness (12 µm = 24 minutes).

NOTE: COLD SEALING SHOULD NOT BE USED IN COMBINATION WITH ALUPRINT® AS THE PASTE ACTS AS A BARRIER TO THE COLD SEAL PROCESS.

## CLEANING

The following solvents can be used for the removal of Aluprint®:

- ALUPRINT® DILUENT
- ETHANOL
- ISOPROPYL ALCOHOL
- METHYL ETHYLKETONE
- ACETONE

As local environmental regulations apply, we strongly recommend to crosscheck with your local authorities about storage, usage and handling of any volatile organic compounds.

## SAFETY

The Aluprint® Printing Pastes are specially designed products for printing on non-sealed anodized aluminum. Although these products contain amounts of organic solvents, these are not exceptionally flammable or toxic. Furthermore, the Aluprint® printing inks have been available for many years and to the best of our knowledge, have proved to be safe when applied in the way prescribed. However, these inks do contain industrial chemicals and thus should be treated as such and best practices for handling and application are to be employed at all times.

Always follow our Material Safety Data Sheets (MSDS) instructions supplied with these products!

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