



Sanodal® Gold 5A

For gold shades of high fastness on anodised aluminium.

Sanodal Gold 5A is a water-soluble product based on ferrioxalate for the chemical dyeing of artificially produced oxide films on aluminium in gold shades of high fastness.

1. Dye-specific data

Commercial form:	Green crystalline powder
Chemical character:	ferric oxalate complex, anionic
Bulk density:	780 g/l
Solubility in deionised water:	650 g/l
pH value, 30 g/l in deionised water:	4,5 ± 0.5
Storage stability:	practically unlimited in closed containers. Protect product from effects of light and moisture. Any lumps that may form have no influence on the product's dyeing properties.
Ecotoxicological data:	see Safety Date Sheet

2. Scope of application and colour scale

Aqueous **Sanodal Gold 5A** solutions can be used to produce gold shades of high fastness to light, weather, corrosion and heat on chemically or - preferably - anodically produced oxide films on aluminium and its alloys. The dyeings are produced by the hydrolytic incorporation of inorganic hydrated iron oxide colour pigments in the oxide film.

The colour scale depends on the working method and ranges from new silver to pale brass to gold tones of extremely varied degrees, even to brownish orange. The colour scale can be extended even to attractive browns by over dyeing aluminium sections that have been electrolytically precoloured in bronze tones.

Sanodal Gold 5A solutions can also be used to decolourize difficult-to-remove adsorption-dyed shades.

Thanks to their high resistance, **Sanodal Gold 5A**-dyed aluminium sections can be used in a wide variety of industrial applications, e.g. the finishing of audiovisual equipment, jewellery, signs and nameplates, household articles and, in the framework of the **Sanodal System**, also for facade elements in the construction industry.

3. Application conditions

Concentration:	10 – 30 g/l
pH value:	4,5 ± 0,5
Dyeing temperature:	40 – 50°C, for pale shades preferably 40°C
Dyeing time:	2 – 20 min, depending on the desired shade
Water quality:	deionised water
Sealing:	2 ml/l Anodal SH-1 (boiling water)

4. **Analytical Control**

Titrimetric Analysis

Reagents

- *0,2 N-KMnO₄ (potassium permanganate)*
A standard concentrate e.g. Titrisol Merck No. 9935, for the preparation of 1 litre 0,1 N solution is diluted to 500 ml in a volumetric flask. Concentration 6,32 g potassium permanganate in 1000 ml solution
- *0,1 M-EDTA (ethylene diamine tetra-acetic acid)*
A standard concentrate e.g. Titriplex III Merck No. 9992, for the preparation of 1 litre 0,1 M solution is diluted to 1000 ml in a volumetric flask.
Concentration: 37,2 g ethylene diamine tetra-acetic acid, disodium salt, mol.wt. 372, in 1000 ml solution.
- *Buffer/Indicator solution*
164 g anhydrous sodium acetate Analar (mol.wt. 82) or
100 g chloroacetic acid crystals pure (mol.wt. 94.5)
10 g 5-sulphosalicylic acid pure (mol.wt. 254.2) as indicator
are dissolved in deionised water and diluted to 1000 ml in a volumetric flask.
- *Sulphuric acid 20 %*

Analytical procedure

A sample from the working dyebath is clarified by filtration, e.g. through a fluted paper filter, with any initial turbid liquid being discarded. 20 ml of the clear filtrate are removed using a pipette and added to 100 ml deionised water and 10 ml sulphuric acid 20 % in a heated beaker fitted with a stirrer. At a temperature of 55 – 65°C / 122 – 140°F the 0.2 N potassium permanganate solution is dripped from a burette into the yellowish solution until a pale pink colour appears and persists.

Consumption: a ml 2.2 N-KMnO₄ (approx. 40 ml for 30 g/l **Sanodal Gold 5A**)

20 ml buffer/indicator solution are now added at the same temperature.
From a second burette 0.1 M-EDTA is dripped into the dull red mixture until the red colour just disappears.

Consumption: b ml 0.1 M-EDTA (approx. 13 ml for 30 g/l **Sanodal Gold 5A**)

Calculation

Concentration of **Sanodal 5A** in g/l:

$$C_{5A} = 2,1 \cdot b$$

Relative concentration of the oxalate in %:

The relative concentration of the oxalate in %. The relative concentrations indicates the molar oxalate/iron ratio, where the ratio 3 moles of oxalate (264 g) to 1 mole of iron (55.9 g) is defined as 100%.

$$C_{Ox} = 33.3 \frac{a}{b}$$

	C_{Ox}
pure Sanodal Gold 5A	= 100 %
with excess oxalate	> 100 %
with insufficient oxalate	< 100 %
minimum value	= 100 %
maximum value	= 140 %

5. Disposal

Disposal of spent dyebaths must be carried out in accordance with local wastewater regulations according to the recommendations given in our technical information bulletin entitled "**Anodal WT-1 Liquid**".

Many of their dyestuffs, pigments and chemicals are patented by Clariant in numerous industrial countries.

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®+ Other Manufacturer's registered trade mark

The signs ®, ®* and ®+ appear only at the first mention of the product.

The information and recommendations presented here were compiled with the utmost care, but cannot be extended to cover every possible case. They are intended to serve as non-binding guidelines and must be adapted to the prevailing conditions.