



## Sanodal<sup>®</sup> Deep Black HBL Liquid

**Sanodal Deep Black HBL Liquid** is a homogeneous dye which is distinguished by outstanding fastness to light, weather and heat.

The main applications for **Sanodal Deep Black HBL Liquid** are:

- dyeing aluminium parts for the electronic and the optics industry, thanks to its above-average heat stability
- dyeing building elements for exterior architectural applications, thanks to its very good light and weather fastness
- production of bluish-grey dyeings for interior applications.

## 1. Dye-specific data

|                       |   |
|-----------------------|---|
| Shade                 | neutral black   |
| Appearance            | black liquid  |
| Chemical character    | homogeneous azo metal complex dye                         |
| Density (20°C)        | 1160 g/l  |
| Solubility            | unlimited in water  |
| Storage stability     | at least 1 year in closed containers between 0°C and 50°C |
| Ecotoxicological data | see Safety Data Sheet.                                    |

## 2. Application conditions

### *Applicable amount, dyeing temperature and time*

|  | Concentration | Dyeing temperature | Dyeing time |
|--|---------------|--------------------|-------------|
| <b>Grey dyeings</b><br>Standard layers (12 µm)       | 0.1 - 2 g/l   | 25 - 60°C          | 10 - 20 min |
| <b>Deep black dyeings</b><br>Standard layers (12 µm) | 10 g/l        | 55 - 60°C          | 10 - 20 min |
| <b>Sanodal layers</b> (25 µm)                        | 10 g/l        | 55 - 60°C          | 30 - 40 min |

|               |  |
|---------------|--|
| pH            | 5.5 ± 0.5  |
| Buffer        | The dyebaths must be buffered with<br>8 g/l sodium acetate trihydrate<br>+ 0.4 ml/l acetic acid for pH 5.6     |
| Water quality | preferably deionized; dyeing is also possible in tapwater, but this<br>can reduce the service life of the bath |
| Sealing       | preferably with <b>Sealing Salt ASL</b> (one or two stage).  |

## 3. Dyebath setting control

### 3.1 **Setting the dyebath**

Since the dye is already in dissolved form, setting and reinforcing the bath is very easy. The dye can be metered by weight or by volume.

### 3.2 Controlling the dyebath

As usual with the **Sanodal** system, it is recommended to control the dyebath regularly by determining its concentration and activity.

There are three possible ways of doing this:

- Reinforcing the bath **or**
- partial renewal of the bath **or**
- complete renewal of the bath.

#### Reinforcing

The bath must be reinforced at the latest when the actual concentration becomes 10% lower than required. The bath should also be reinforced when its activity becomes reduced. In this case, it is necessary to add not only the amount of dye that has been consumed but also the amount required to offset the reduced activity of the dyebath, even though this can lead to exceeding the initial concentration at which the dyebath was set.

#### Partial renewal

This is a variant of reinforcing. Partial renewal of the dyebath is recommended when the actual concentration becomes considerably greater than that at which the dyebath was set, owing to a high content of foreign ions, i.e. when a reduction of the bath activity is observed.

### 3.3 Service life of the dyebath

When properly controlled and maintained, **Sanodal Deep Black HBL Liquid** dyebaths can be used for months or even years without impairment of their functioning. However, the following points must be observed:

- the dyebath tank or vessel must be made of suitable materials (e.g. stainless steel, stoneware, plastic)
- when the bath is not in use, its pH must be kept at 5.5-6 by an occasional addition of acetic acid or dilute caustic soda solution, to keep "natural ageing" to a minimum
- any foreign materials that may impair the bath's functioning must be kept away as much as possible.

The service life of the dyebath is reduced

- when phosphate-containing water is used (e.g. chemically softened water)
- when foreign substances (e.g. sulphate and aluminium ions) are dragged in.

## 4. Fastness and other properties of the dyeings

### 4.1 Lightfastness

**Sanodal Deep Black HBL Liquid** is distinguished by outstanding lightfastness.

#### Black dyeings

| Layer thickness          | ISO 2135, Blue Scale rating |
|--------------------------|-----------------------------|
| 12 µm                    | > 8                         |
| 25 µm ( <b>Sanodal</b> ) | > 10                        |

## 4.2 Heat stability

Dyed test specimens are very stable to heat.  
Black dyeings (12-15 µm) were tested for 2 h at 250°C. No change was observed.

## 4.3 Sealing quality

The sealing quality is not influenced by the dye.

## 4.4 Corrosion resistance

The results of the following tests:

- Cass test (ISO 3770, 24 h) and
- Kesternich test (DIN 50018, SFW 2,0 S, 6 cycles)

are excellent and are not negatively influenced by the dye.

## 4.5 Strippability of dyeings

Unsealed dyeings are virtually unstrippable in diluted nitric or sulphuric acid.  
They can be stripped in nitric acid 10 % + potassium permanganate 5 %.  
After the treatment in Potassium permanganate, neutralization must be carried out for 1-5 min in a sodium bisulphite 5 % solution.

## 5. Disposal of spent dyebaths

Spent dyebaths must be disposed of with **Anodal® WT-1 Liquid**. The precipitation method is described in the Technical Information bulletin for **Anodal WT-1 Liquid**.

The table below gives the dosages necessary for precipitating **Sanodal Deep Black HBL Liquid**.

| Precipitation method | FeCl <sub>3</sub> 40% ml/g dye | Etching lye ml/g dye | Anodal WT-1 Liquid ml/g dye | Residual dye in the filtrate mg/l | Chrome content in the filtrate mg/l | Dye reduction in % related to dyebath concentration |
|----------------------|--------------------------------|----------------------|-----------------------------|-----------------------------------|-------------------------------------|---|
| A                    | 1.0                            | -                    | 0.7                         | < 1                               | < 0.05                              | > 99.9  |
| B                    | 1.0                            | -                    | 0.7                         | < 1                               | < 0.05                              | > 99.9  |
| C                    | -                              | 1.0                  | 0.7                         | < 1                               | < 0.05                              | > 99.9  |

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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.