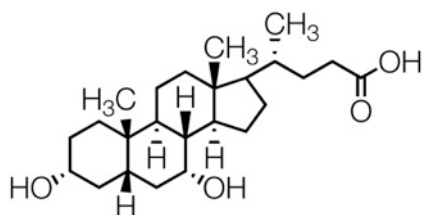


# Chenodeoxycholic Acid

## Staining Solution Additive



Chenodeoxycholic Acid is a staining additive that increases the performance of Dye Solar Cells.

When used as a co-adsorbent with most photo-sensitizers Chenodeoxycholic Acid modifies the titania surface and prevents dye aggregation.

Chenodeoxycholic Acid is simply added to the dye solution and is compatible with most typical staining procedures.



### Characteristics

Aspect	white powder
Chemical Name	chenodeoxycholic acid
Molecular Formula	C <sub>24</sub> H <sub>40</sub> O <sub>4</sub>
Formula Weight	392.57 g/mol
CAS Number	474-25-9
HS Code	2918.9990

### Suitable For

Ruthenium dyes such as: Ruthenizer 535; Ruthenizer 535-bisTBA; Ruthenizer 535-4TBA; Ruthenizer 520-DN; Ruthenizer 620-1H3TBA.

Purely organic dyes, such as Sensidizer SQ2.

### Retail Quantities

100 mg	ref. 23112
200 mg	ref. 23122
500 mg	ref. 23152
1 g	ref. 23113
2 g	ref. 23123
5 g	ref. 23153
10 g	ref. 23114
20 g	ref. 23124
50 g	ref. 23154
100 g	ref. 23115
200 g	ref. 23125
500 g	ref. 23155

Pricing on product page:  
[solx.ch/chenoacid](http://solx.ch/chenoacid)

### How to Order

Please visit our webshop at [shop.solaronix.com](http://shop.solaronix.com), or send us an e-mail or fax indicating your desired products.

### Bulk Supply

In addition to the retail quantities listed above, Chenodeoxycholic Acid is also available in bulk for industrial purpose. Please inquire.

## USAGE

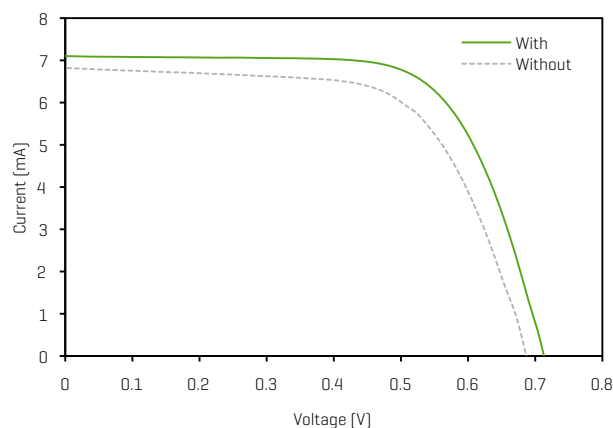
Chenodeoxycholic Acid is a staining additive commonly used with ruthenium or organic photo-sensitizers in the preparation of staining solutions for Dye Solar Cells. This co-adsorbent will prevent dye aggregation on the semiconductor surface, reducing losses in the solar cell's operation.

Chenodeoxycholic Acid is a white solid added with the dye powder to the solvent while preparing staining solutions. The concentration of co-adsorbent is typically 10 fold the dye concentration. Please refer to the accompanying literature of our photo-sensitizing dyes for a detailed staining procedure.

## EXAMPLE

### Comparison of Performances With or Without Additive

Two sets of Dye Solar Cells were fabricated, without and with Chenodeoxycholic Acid in the staining solutions. In both cases, a 36 mm<sup>2</sup> titania photo-anode was prepared with 4 printed layers of Ti-Nanoxide T/SP and 1 printed layer of Ti-Nanoxide R/SP on a of TC022-7 glass substrate. The first set of electrodes were stained in a solution of Ruthenizer 535-bisTBA without additive, while the second set used Ruthenizer 535-bisTBA and Chenodeoxycholic Acid [1:10]. The staining procedure is further described in the application note of Ruthenizer 535-bisTBA. For all solar cells, a platinum coated cathode was prepared on another TC022-7 substrate with a layer of Platisol T. The two electrodes were laminated together using Meltonix 1170-60, and the solar cell was filled with Iodolyte HI-30 through a hole in the cathode. The filling hole was then sealed with Meltonix 1170-60 and a thin glass circle of 6 mm diameter. The resulting solar cell was placed under 1 sun illumination using a Solaronix Solixon Class-A solar simulator, and equipped with an adequate mask to avoid overestimated results.



	Without	With
$V_{oc}$	689 mV	712 mV
$J_{sc}$	18.93 mA/cm <sup>2</sup>	19.73 mA/cm <sup>2</sup>
FF	0.64	0.69
Eff.	8.4 %	9.6 %

## STORAGE AND SAFETY

### Storage

Store the product in its original container, upright and tightly sealed. Keep in a dry place at room temperature, away from light exposure.

The product is not known to suffer from degradation when stored properly. Consider filling the container with inert gas for very long term storage.

While in use, avoid to keep the container open unnecessarily.

### Safety

Chenodeoxycholic Acid is for research and development use only, and to be manipulated by adequate personnel. Ensure good ventilation of the workplace, and wear suitable protective equipment.

For a complete description of safety measures, please refer to the Material Safety Datasheet (MSDS) of Chenodeoxycholic Acid.

[solaronix.com/msds/](http://solaronix.com/msds/)

## RELATED PRODUCTS

### Cited in This Document

- Ruthenizer 535-bisTBA, high performance sensitizer.
- TC022-7, FTO coated glass substrates.
- Ti-Nanoxide T/SP, screen-printable titania nanoparticle paste.
- Ti-Nanoxide R/SP, screen-printable reflective titania paste.
- Platisol T, platinum precursor paint.
- Iodolyte HI-30, very high performance electrolyte.
- Meltonix 1170-60, hot-melt sealing films.
- Solixon, continuous illumination solar simulators.

### Consider Also

- Ruthenizer 535-bisTBA, industry standard photo-sensitizer.
- Ruthenizer 620-1H3TBA, panchromatic photo-sensitizer
- Ruthenizer 520-DN, amphiphilic ruthenium dye.
- Labware: Staining Boxes, Plastic Tweezers.

## REFERENCES

### Articles About Chenodeoxycholic Acid

For further reading, have a look at the following articles:

- Chem. Commun. 2008, 5194-5196  
[doi: 10.1039/B809093A]
- Nature Chemistry 2011, 3, 211-215  
[doi:10.1038/nchem.966]
- Science China Chemistry 2011, 54, 699-706  
[doi:10.1007/s11426-011-4227-9]
- Chem. Sci. 2012, 3, 1177-1184  
[doi: 10.1039/C2SC00953F]
- Journal of Molecular Modeling 2012, 18, 2099-2104  
[doi:10.1007/s00894-011-1230-1]
- J. Phys. Chem. C 2013, 117, 3874-3887  
[doi:10.1021/jp4003577]

### People Using Chenodeoxycholic Acid

A random selection of publications using Chenodeoxycholic Acid:

- Solar Energy Materials & Solar Cells 2013, 117, 9-14  
[doi:10.1016/j.solmat.2013.05.012]

Do you use this product? Would you like your article to appear here? Please let us know at [materials@solaronix.com](mailto:materials@solaronix.com).

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