Guide for Use of Chromazurol S Solution to Indicate Presence of Copper-based Wood Preservatives in Post-consumer Wood
The National Timber Product Stewardship Group is a coalition of Australian timber industry associations set up to:

- Double the amount of post-consumer wood recovered for reuse, recycling and renewable energy to one million tonnes per year by 2017
- Maximise the positive environmental benefits of all wood products across the whole life cycle

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Introduction

This guide describes how to prepare, store and use the colour indicator Chromazurol S solution for the detection of copper-based preservatives in streams of post-consumer wood destined for reuse, recycling or the generation of renewable energy.

Chromazurol S (also called eriochromazurol S and Mordant Blue 29) is a biological dye that turns deep blue to blue-black when in contact with copper in preservative treated timber.

Examples of timber preservatives that contain copper in Australia include:

- CCA, copper-chromium-arsenate, which is the most commonly found timber preservative that contains copper.
- ACQ and Copper Azole, copper combined with other compounds, which are now most commonly used to treat domestic decking timber.
- Copper Naphthenate, a common timber preservative usually remediably applied to preservative treated timber when it is cut or drilled.
Health and Safety

Chromazurol S solution can be supplied as a premixed (0.5%) solution or it can be made by blending component chemicals. It is recommended that if your company does not have the proper facilities and equipment for the preparation of the Chromazurol S solution and disposal of any waste that you purchase Chromazurol S solution pre-made.

Information on the health and safety aspects of individual chemicals have been obtained by the Material Safety Data Sheets (MSDS) provided by suppliers of the component concentrated chemicals.

Concentrate and dilute Chromazurol S solution should not be stored with strong oxidising agents and food stuff. Chromazurol S solution should be stored in a light impervious glass or plastic container. It should be kept refrigerated in a “chemicals only” refrigerator. It should not be stored in a normal domestic refrigerator that is also used to store food.

Advice on concentrate Chromazurol S is limited. This limited information is an indication that it is not considered dangerous. Sodium Acetate, a component chemical of Chromazurol S solution is regarded as low toxicity.

When using the dilute Chromazurol S solution use a good quality spray bottle. For further occupational health and safety and storage information refer to the attached MSDS.
 Suppliers
Due to the very small volumes required for copper-based preservative assessment, most suppliers do not supply the prepared solution, only the chemical concentrates.

COMPONENT CHEMICALS
Chem-Supply
telephone (08) 8440 2000
fax (08) 8440 2001
email: websales@chemsupply.com.au
web: www.chemsupply.com.au

Can supply the Chromazurol S solution in 25g dry/powder form, and sodium acetate. 25g is enough to produce 5L of a 0.5% (w/v) solution.

PRE-MADE DILUTE (0.5%) SOLUTION
Arch Wood Protection (Aust)
telephone (03) 9339 8913
fax (03) 9338 2777
Unit 3/85-91 Keilor Park Drive
Tullamarine VIC 3043
PO Box 242, Tullamarine VIC 3043

Can arrange mixing and supply of the dilute solution by a third-party laboratory.
Preparation

Since small quantities are required for assessments, and the solution is stable and can be used over a long period if it is stored correctly, it is recommended that no more than 1 litre of solution is made at any one time. Smaller volumes can be transferred into spray bottles for field use.

To prepare the solution you will need a balance and access to a non-food preparation area or sink. It is advisable to wear rubber gloves. To make 1 litre of 0.5% solution of Chromazurol S:

1. Place 800 ml of distilled water in a suitable container and add 5 g of the Chromazurol S granules.
2. Stir until fully dissolved.
3. Slowly add 50 g of the sodium acetate and stir until dissolved.
4. Add distilled water to make up 1 litre
5. Decant 200 ml to a good quality hand operated spray bottle for field use.
6. Spray bottles that allow the solution to drip onto operator’s hand should not be used.
7. Spray bottle should be labeled with its contents, concentration, date of preparation and use-by date (one year after filling).
Storage

1. This solution is light and temperature sensitive; it recommended that any time when not in use that the solution be stored in a dark cool place, preferably a refrigerator used specifically for storing chemicals. Chromazurol S is incompatible with strong oxidising agents and should not be stored in close proximity to them.

2. Field use solution should not be left exposed to sunlight for long periods of time. It is recommended that unused solution should be discarded after one year. To discard any significant quantities of unused solution contact the supplier or your local municipal council.
Usage

1. Spray the specimen with the 0.5% solution, preferably to the end-grain of freshly cut timber.

2. Copper gives a deep blue to blue-black colour, while any untreated areas are coloured orange. The colour persists for some weeks.

Notes

- The change in colour is more easily detected on freshly exposed end-grain. Due to weathering and/or dirt it may be necessary to cut the surface to expose a fresh exposed section to apply the solution.

- On extremely dry timber the solution is absorbed very quickly and will take some time to react with any copper present. In these situations it may aid detection to lightly wet the surface of the timber being inspected with a little de-ionised water. Caution should be used in using domestic, bore or tank water as copper present in these water sources may provide a false reading.

- Avoid decayed wood because Chromazurol S solution is also an indicator for some types of wood decaying fungi.

- Colour changes can also be caused by substances that are not copper-based wood preservatives such as iron hydroxide (rust).
Assessment of Colour Change

The solution has a yellow orange colour when applied to clean wood and a distinct blue to blue-black when applied to wood that has been previously treated with copper containing preservatives, e.g. CCA. The colour change should occur within 10 seconds. Examples of positive and negative results are below.

<table>
<thead>
<tr>
<th>Negative</th>
<th>Positive - Wood treated with preservative CCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>no treatment with copper based preservative</td>
<td>- Wood treated with preservative CCA</td>
</tr>
<tr>
<td>Positive - Wood treated with preservative copper napthenate</td>
<td></td>
</tr>
</tbody>
</table>

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