Linsmaier and Skoog/Murashige and Skoog Microelements (100X)

Product Code: TS1063

Product Description:
Linsmaier and Skoog Medium (LS) has been developed by Linsmaier and Skoog in 1965 for optimizing the organic requirement of tobacco cultures. The medium is a standard Murashige and Skoog (MS) basal salts supplemented with Linsmaier and Skoog vitamins. It is widely used for micro propagation, organ culture, callus culture and suspension culture.

Linsmaier and Skoog Microelements is a nutrient blend of inorganic salts which provides all the essential microelements to the plants. Manganese sulphate serves as a source of manganese that is essential for processes like photosynthesis and respiration. Boron plays a key role in carbohydrate metabolism. Molybdenum, Cobalt, Copper and Zinc enhance metabolism in the plants. Iodine helps to improve growth of the root cells.

The product is plant tissue culture tested but it is the sole responsibility of the user to ensure the suitability of the medium for individual species.

Composition:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>(100X) mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICROELEMENTS</td>
<td></td>
</tr>
<tr>
<td>Boric acid</td>
<td>620.000</td>
</tr>
<tr>
<td>Cobalt chloride hexahydrate</td>
<td>2.500</td>
</tr>
<tr>
<td>Copper sulphate pentahydrate</td>
<td>2.500</td>
</tr>
<tr>
<td>EDTA disodium salt dihydrate</td>
<td>3730.000</td>
</tr>
<tr>
<td>Ferrous sulphate heptahydrate</td>
<td>2780.000</td>
</tr>
<tr>
<td>Manganese sulphate monohydrate</td>
<td>1690.000</td>
</tr>
<tr>
<td>Molybdic acid (sodium salt)</td>
<td>21.300</td>
</tr>
<tr>
<td>Potassium Iodide</td>
<td>83.000</td>
</tr>
<tr>
<td>Zinc sulphate heptahydrate</td>
<td>860.000</td>
</tr>
<tr>
<td>Total(gms/litre)</td>
<td>9.8</td>
</tr>
</tbody>
</table>

For 1X, use 0.10 gms/litre

Material required but not provided:
- 1N NaOH/HCl
- Sucrose (PCT0607)
- Plant growth regulators
- Linsmaier and Skoog Vitamins (VP017)
- Linsmaier and Skoog Macroelements (TS1064/PL009)
- Gelling agents like Ágar (PCT0901) or CleriGel™ (PCT0903)

Precautions:
- Ensure appropriate pH of the medium before addition of gelling agent as acidic pH will lead to decreased gelation resulting in semi solid flowing gel while alkaline pH will lead to formation of hardened gel.
- Use of Distilled water/Tissue culture grade water is recommended for media preparation as tap water or lower grade water may lead to salt precipitation and improper gelation.
- Avoid preparation of concentrated solutions, as it will lead to precipitation of salts.

Directions:
- Reconstitute powder by adding required quantity of powder in two-third of total volume with constant, gentle stirring till the powder gets completely dissolved.
- Add heat stable supplements prior to autoclaving.
- Make up the final volume with distilled water.
- Adjust the pH of the medium to 5.75 ± 0.5 using 1N NaOH/HCl.
- Add gelling agent and heat the medium to boiling till complete dissolution of gelling agent.
- Sterilize the medium by autoclaving at 15 lbs and 121°C for 15 min.
- Cool the autoclaved medium to about 45°C before adding heat labile supplements.
- Aseptically dispense the desired amount of medium under a laminar airflow unit in sterile culture vessels.

Quality Control:

Appearance
Yellow to greenish yellow, homogenous free flowing powder

Please refer disclaimer overleaf
Solubility
9.80 gms/litre soluble in distilled water

Colour and Clarity
Light yellow to yellow, clear solution

pH at 25°C
2.30 - 3.30

Plant Tissue Culture Test
The growth promoting property of mixture is assessed by adding required supplements to make a complete medium and testing for culture performance. Culture test is done by providing plant cultures with relative humidity of about 60%±2%, temperature 22°C±2°C and photoperiod of about 16:8. The plant species showed actively growing callus and shoots with no structural, necrotic and toxic deformity.

Storage and Shelf Life:
- The plant tissue microelements powder is extremely hygroscopic and must be stored at 2-8°C in air tight containers.
- Preferably, entire content of each package should be used immediately after opening.
- Use before the expiry date.