

### Technical Information

#### Heller Microelements (100X)

**Product Code: TS2035**

**Application:** Heller microelements (100X) powder has been specially formulated for plant cell, tissue and organ cultures. The powder contains inorganic microelements and iron source. The vial contains 0.23 grams of dehydrated microelements that is sufficient for making 100 litres of complete medium

#### Composition\*\*

Ingredients	mg/Litre
Manganese sulphate.H <sub>2</sub> O	0.08
Boric acid	1.00
Potassium iodide	0.01
Zinc sulphate.7H <sub>2</sub> O	1.00
Copper sulphate.5H <sub>2</sub> O	0.03
Aluminium chloride.6H <sub>2</sub> O	0.05
Nickel chloride.6H <sub>2</sub> O	0.03
Ferric chloride.6H <sub>2</sub> O	1.00
<b>TOTAL gm/litre</b>	<b>0.003</b>

#### Methodology

Suspend 0.002 grams of dehydrated microelements powder# in 600ml of distilled water. Apply constant gentle stirring to the solution till the powder dissolves completely. Add desired heat stable supplements prior to autoclaving. Adjust the medium to the desired pH using 1N HCl/NaOH. Make up the final volume to 1000ml with distilled water. Sterilize the medium by autoclaving at 15 lbs or 121°C for 15 minutes. Cool the autoclaved medium to 45°C before adding the filter sterilized heat labile supplements. Dispense the desired amount of medium aseptically in sterile culture vessels.

# Weight after vacuum drying to remove all water

#### Quality Control

**Appearance**

Yellow to greenish yellow, homogeneous, free flowing powder

**Solubility**

0.23 gm/litre soluble in distilled water..

**Colour and clarity**

Light yellow to yellow, clear solution

**pH at 25°C:**

4.3 ±0.5 of 0.023% w/v dehydrated microelements powder.

### Cultural Response

#### Cultural condition :

Incubation period	: 5 weeks
Relative humidity	: 60% ± 2%
Temperature	: 22°C ± 2°C
Photoperiod (D:N) in hours	: 16:8

Cell Line	Type of Culture	Results
<i>Musa</i> species	Shoot culture	No structural deformity observed No necrotic tissues, Actively growing shoots, No toxicity to shoots
<i>Daucus</i> species	Callus culture	No necrotic tissues, Actively growing callus, No toxicity to callus

The medium is prepared as per direction. The growth promoting activity of this vitamin mixture is evaluated using two plant species viz. *Musa* species and *Daucus* species through three passages. Plant growth hormones (e.g. 2,4-D, NAA, Kinetin and 6-BAP) are added in suitable combinations and concentrations.]

## Storage and Shelf Life

Dehydrated microelements powder is extremely hygroscopic and should be protected from atmospheric moisture. If possible, the entire content of each bottle should be used immediately after opening or else the unused portion should be stored in a desiccator and refrigerated at 2- 8°C. Use before the expiry date.

## Reference

- Heller R., Ann. Sci. Nat. Bot. Biol. Veg. 11<sup>th</sup> Ser., (1953), 14, 1 - 223

## Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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