

# Product information sheet



a brand of dephyte e.K.  
Büttnerstr. 22  
30165 Hannover  
Germany

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web: <https://www.phygenera.de>  
email: [info@phygenera.de](mailto:info@phygenera.de)

**Article-ID:** MD150  
**Article name:** DKW Medium incl. Vitamins  
**HS-Code:** 38210000  
**Synonyms:** Juglans Medium, DKW-C

Dehydrated powder premix for the preparation of a plant tissue culture medium, suitable for *in vitro* techniques. DKW has originally been developed for micropropagation of Paradox Walnut Rootstock (*Juglans hindsii* x *J. regia*) by Driver and Kuniyuki (1984). A corrected basic formula called "DKW-C" has been published later by McGranahan *et al.* (1987), where also modifications for initiation, rooting and somatic embryogenesis conditioning are mentioned.

The formulation (Tab. 1) contains macroelements, microelements and vitamins.

## Storage

The mixture contains strong hygroscopic ingredients, a storage under dry conditions is necessary. Optimal storage temperature is between 2 – 8 °C.

## Dosage

Typical: 5.287 g/l

## Preparation example

1. Dissolve powder in distilled water
2. Add further substances if needed (additives, carbon sources, auxins/cytokinins or other plant growth regulators)\*
3. Adjust the pH using potassium hydroxide (KOH) / sodium hydroxide (NaOH) or hydrochloric acid (HCl)
4. If necessary, add gelling agent to obtain a solid media (usage of Gellan is not recommended for this calcium-rich medium)
5. Autoclave at 121 °C, 15 PSI

\* temperature sensitive substances should be sterile filtrated and added after autoclaving.

## Further informations

It is not recommended to prepare stock solutions from this formulation, as water insoluble precipitates can form, which has a influence on the availability of nutrients.

Prevent air contact while weighing the powder. Close bottle immediately after weighing. By water absorption from the air the products quality can be affected strongly. Possible consequences are aggregation / clumping.

High humidity during weighing can influence the weighing precision. After weighing is finished, the powder should be dissolved in water without unnecessary time delay.

### Table 1: Medium composition

Substance name	Molecular weight	Concentration	Molarity*
<b>Macro elements</b>			
Calcium chloride	110.98	112.47 mg/l	1.0 mmol/l
Potassium dihydrogen phosphate	136.09	265.00 mg/l	1.9 mmol/l
Calcium nitrate	164.09	1367.47 mg/l	8.3 mmol/l
Magnesium sulfate	120.37	361.38 mg/l	3.0 mmol/l
Potassium sulfate	174.26	1559.00 mg/l	8.9 mmol/l
Ammonium nitrate	80.04	1416.00 mg/l	17.7 mmol/l
<b>Micro elements</b>			
FeNaEDTA-Trihydrate	421.10	51.164 mg/l	121.5 µmol/l
Copper sulfate pentahydrate	249.69	0.25 mg/l	1 µmol/l
Boric acid	61.83	4.8 mg/l	77.6 µmol/l
Manganese sulfate monohydrate	169.02	33.5 mg/l	198.2 µmol/l
Sodium molybdate dihydrate	241.95	0.39 mg/l	1.6 µmol/l
Zinc sulfate heptahydrate	287.53	16.45 mg/l	57.2 µmol/l
Ni-EDTA		0,008588 mg/l	0.02 µmol/l
<b>Organic substances</b>			
Glycine	75.07	2.00 mg/l	26.64 µmol/l
myo-Inositol	180.16	100.00 mg/l	555.06 µmol/l
Nicotinic acid	123.11	1.00 mg/l	8.1 µmol/l
Thiamine hydrochloride	337.27	2.00 mg/l	5.9 µmol/l

\*Rounded values

## References

Driver, John A., and Andrew H. Kuniyuki. "In vitro propagation of Paradox walnut rootstock." *HortScience* 19.4 (1984): 507-509.

McGranahan, G. H., J. A. Driver, and W. Tulecke. "Tissue culture of Juglans." *Cell and tissue culture in forestry: case histories: gymnosperms, angiosperms and palms*. Dordrecht: Springer Netherlands, 1987. 261-271.