

G-418 (Geneticin® disulfate)

Antibiotic for selection of cells

fon:
 +49 (0)731 - 3608 123
 fax:
 +49 (0)731 - 3608 962
 eMail:
info@genaxxon.com
 internet:
www.genaxxon.com

Product	Cat#	Package size
G-418 sulfate	M3117.0001	1g
G-418 sulfate	M3117.0005	5g
G-418 sulfate	M3117.0010	10g
G-418 sulfate solution (50mg/mL)	M3118.0020	20mL
G-418 sulfate solution (50mg/mL)	M3118.5020	5x20mL
G-418 sulfate solution (50mg/mL)	M3118.0100	100mL

Synonyms: G418 sulfate, Geneticin®

Description

Aminoglycoside antibiotic related to gentamycin that inhibits prokaryotic and eukaryotic protein synthesis, is toxic to bacteria, yeast, protozoans, helminths, higher plant and mammalian cells. Used in molecular genetics as a selective agent for the bacterial *neo^r/kar^r* genes. The product of these genes, aminoglycoside 3'-phosphotransferase, inactivates G418, neomycin, and kanamycin by phosphorylation. Introduction of either of these genes into cells can confer resistance to G418, which enables cells to grow in media containing G418.

The effective concentration of G-418 varies as to the cell type, media, growth concentration and the cell's metabolic rate and position in the cell cycle. Effective concentrations have been reported from 10µg/mL up to 5mg/mL and even higher. When using G-418 in a new cell system, a full dose curve is suggested, and with each new lot of G-418, several points on that curve should be retested, as the potency (determined in a standard *B. subtilis* assay) may not exactly correlate to your system.

- G-418 is used as selection antibiotic
- G-418 is inactivated by Neomycin Transferase
- Transfections carrying the Neomycin gene are resistant against G-418
- Transfected cells are most often transient stable
- G-418 is a broad band antibiotic
- G-418 is toxic against all pro- and eukaryotes
- Shipped as sterile solution
- Highly pure

Recommended usage:

The optimal concentration of G418 for selection of resistance will vary according to the organism and/or cell type under investigation. In general, the concentration of active drug required for selection is as follows:

Dictyostelium sp.:	10- 100µg/mL
Plant cells:	10- 100µg/mL
Yeast:	500-1000µg/mL
Mammalian cells:	100-2000µg/mL

A multiplying cell will be affected by the presence of G418 sooner than a resting cell. It will take at least two cell generations to achieve cell death in sensitive cell lines.

Some sources report an effect of high salt concentrations, especially ammonium sulfate as N-source on the efficacy of G418. This effect might be seen at G418 concentrations below the above mentioned concentrations (e.g. yeast with 200µg/mL), but cannot be excluded at all. If you want to be sure, that G418 does not lose its effect, glutamate instead of ammonium sulfate should be used as N-source in minimal media.

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Specifications (powder):

Purity:	>98% (TLC)
Potency/Activity:	>650µg/mg
Form:	solid, crystalline
MW:	692.7 g/mol
Formula:	C ₂₀ H ₄₀ N ₄ O ₁₀ x2H ₂ SO ₄
CAS-No.:	[108321-42-2]

Storage/Stability:

Following reconstitution, sterile filter (0.22µm or 0.45µm filter), aliquot and freeze (-20°C) for long term storage or refrigerate (4°C) for short-term storage.

Powder is stable at RT for 2 years. Avoid moisture uptake, as this can decrease product potency. Sterile filtered solutions are stable for at least 1 year at 4°C.

Solubility:

Typically a stock solution of 10-50mg/mL is prepared in a highly buffered solution (e.g. 100mM HEPES, pH7.3 or cell culture medium).

Specifications (solution):

Activity (of used powder)	>650µg/mg
Concentration (solution)	50mg/mL
Recommended concentration	10µg/mL up to 2mg/mL
Endotoxin	< 10 EU/mL
Shelf life	> 2 years
Storage temperature (solution)	- 20°C

Storage/Stability:

Sterile filtered solutions are stable for at least 1 year at 4°C.
Sterile filtered solutions are stable for at least 2 year at -20°C.

For research use only. Not for human or drug use.