

PRODUCT INFORMATION

PAMAM Dendrimer G4.5 Carboxylate (sodium salt) (water solution)

Item No. 39109

CAS Registry No.: 202009-66-3

Synonyms: PAMAM G4.5 Carboxylate,
Polyamidoamine Dendrimer G4.5
Carboxylate

MF: $[\text{NH}_2(\text{CH}_2)_2\text{NH}_2]_n(\text{G}=4.5); \text{dendri}$ $[\text{NH}_2(\text{CH}_2)_2\text{NH}_2]_n(\text{G}=4.5); \text{dendri}$ PAMAM($\text{NHCH}_2\text{CH}_2\text{COONa}$)₁₂₈
PAMAM($\text{NHCH}_2\text{CH}_2\text{COONa}$)₁₂₈

FW: 26,251.9

Supplied as: A solution in water

Storage: -20°C

Stability: ≥4 years

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Description

PAMAM dendrimer G4.5 carboxylate (PAMAM G4.5 carboxylate) is a polyamidoamine (PAMAM) dendrimer with carboxylate termini that has been used as a drug delivery system.¹ It is approximately 87.9 Å in diameter in water and has 96 surface groups.² Unlike the amine-terminated PAMAM G5.0 (Item No. 39075), it does not rupture bilayer lipid membranes when used at a concentration of 50 μM.³ PAMAM G4.5 carboxylate disulfur-linked aggregates (10 μg/ml) encapsulating the phenol ferulic acid (Item No. 19871) and the mitotic inhibitor paclitaxel (Item No. 10461) induce apoptosis and decrease the mitochondrial membrane potential in multidrug-resistant KB-8-5 epidermal carcinoma cells.¹ Complexes of PAMAM G4.5 carboxylate with the active component of cisplatin are cytotoxic to A2780 ovarian cancer cells (IC₅₀ = 620 nM).⁴ A fluorescently labeled form of PAMAM G4.5 carboxylate selectively accumulates in tumors and kidneys over liver, spleen, heart, and lungs in a 4T1 murine mammary carcinoma model.⁵

References

1. Anbazhagan, R., Muthusamy, G., Krishnamoorthi, R., *et al.* PAMAM G4.5 dendrimers for targeted delivery of ferulic acid and paclitaxel to overcome P-glycoprotein-mediated multidrug resistance. *Biotechnol. Bioeng.* **118**(3), 1213-1223 (2021).
2. Caminati, G., Turro, N.J., and Tomalia, D.A. Photophysical investigation of starburst dendrimers and their interactions with anionic and cationic surfactants. *J. Am. Chem. Soc.* **112**(23), 8515-8522 (1990).
3. Shcharbin, D., Drapeza, A., Loban, V., *et al.* The breakdown of bilayer lipid membranes by dendrimers. *Cell. Mol. Biol. Lett.* **11**(2), 242-248 (2006).
4. Kirkpatrick, G.J., Plumb, J.A., Sutcliffe, O.B., *et al.* Evaluation of anionic half generation 3.5-6.5 poly(amidoamine) dendrimers as delivery vehicles for the active component of the anticancer drug cisplatin. *J. Inorg. Biochem.* **105**(9), 1115-1122 (2011).
5. Oddone, N., Lecot, N., Fernández, M., *et al.* *In vitro* and *in vivo* uptake studies of PAMAM G4.5 dendrimers in breast cancer. *J. Nanobiotechnology* **14**(1), 45 (2016).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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