

TECHNICAL DATA SHEET

Fluorescent Imaging Reagent



5-FAM-ZOL

Catalogue Number: BV111005

* For Laboratory Use. A product for research purposes only, not for human use.

DESCRIPTION: 5-FAM-ZOL is a fluorescent bisphosphonate imaging reagent, which can be used for both *in vitro* and *in vivo* studies.

CONTENTS: Each vial contains 110 nmol of 5-FAM-ZOL in lyophilized dry solid form. The reagent can be reconstituted with aqueous buffers (calcium/magnesium free PBS buffer, 0.9% NaCl solution, or many other buffers of the customers' choice with near neutral pH).

PROPERTIES: The physical properties of 5-FAM-ZOL can be found in **Table 1** and **Figure 1**.

STORAGE & HANDLING:

- Upon receipt, 5-FAM-ZOL should be **stored at $\leq -20\text{ }^{\circ}\text{C}$ and protected from light**. When stored and handled properly, 5-FAM-ZOL is stable for at least 18 months in dry solid form.
- Before opening the vial, check to ensure that all material is at the bottom of the vial.
- After reconstituting with aqueous buffers, gently swirl the solution to ensure that the solid is fully dissolved in solution.
- Once reconstituted with aqueous buffers, it is highly recommended to aliquot the solutions for longer-term use, and the aliquots should be stored at **4 $^{\circ}\text{C}$ or $-20\text{ }^{\circ}\text{C}$ and protected from light**.

IMAGING APPLICATIONS:

- 5-FAM-ZOL and similar reagents were previously applied in mouse, rat and rabbit studies at doses of approximately 50-100 nmol/kg, which could be a starting point for use in other animal models.
- We also have experience using sequential fluorescent reagents, as well as multiple fluorescent reagents in a single administration and we would be happy to provide technical advice/support if needed. Please send your technical questions to inquiry@biovinc.com.

SELECTED REFERENCES:

Table 1. Properties of 5-FAM-ZOL

Parameter	Value
M.W.	704.5 g/mol
Abs Max ¹	493 nm
Em Max ¹	521 nm
Extinction Coefficient ²	73,000 M ⁻¹ cm ⁻¹
Purity ³	> 98 %
Appearance	Orange-yellow solid

¹UV-VIS absorption and fluorescence emission were measured in 0.1 M phosphate buffer, pH 7.2. The maximum wavelengths shown above have ± 1 nm instrumentation error.

²The extinction coefficient for 5-FAM-ZOL is assumed the same as 5(6)-carboxyfluorescein.

³Purity is determined by reverse phase HPLC, ¹H NMR, and ³¹P NMR spectroscopy.

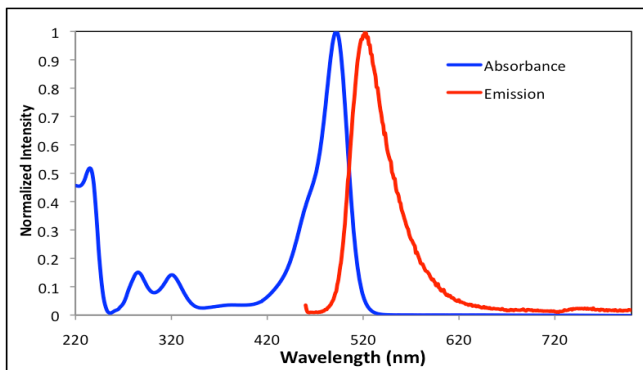


Figure 1. Absorbance and emission spectra of 5-FAM-ZOL, in 0.1 M phosphate buffer, pH 7.2

- Sun S, Blazewska KM, Kadina AP, Kashemirov BA, Duan X, Triffitt JT, Dunford JE, Russell RGG, Ebetino FH, Roelofs AJ, Coxon FP, Lundy MW, McKenna CE. [Fluorescent Bisphosphonate and Carboxyphosphonate Probes: A versatile Imaging Toolkit for Applications in Bone Biology and Biomedicine](#). 2016, *Bioconjugate Chemistry*, 27(2), 329-340.
- Junankar S, Shay G, Jurczyk J, Ali N, Down J, Pocock N, Parker A, Nguyen A, Sun S, Kashemirov B, McKenna CE, Croucher PI, Swarbrick A, Weilbaecher K, Phan TG, Rogers MJ. [Real-Time Intravital Imaging Establishes Tumor-Associated Macrophages as the Extraskelatal Target of Bisphosphonate Action in Cancer](#). 2015, *Cancer discovery*, 5(1): 35-42.
- Verhulst A, Sun S, McKenna CE, D'Haese PC. [Endocytotic Uptake of Zoledronic Acid by Tubular Cells May Explain Its Renal Effects in Cancer Patients Receiving High Doses of the Compound](#). 2015, *Plos ONE*, 10(3): e0121861.
- Cheong S, Sun S, Kang B, Bezouglaia O, Elashoff D, McKenna CE, Aghaloo TL, Tetradis S. [Bisphosphonate Uptake in Areas of Tooth Extraction or Periapical Disease](#). 2014, *Journal of Oral and Maxillofacial Surgery*, 72(12):2461-2468.
- Bae S., Sun S., Aghaloo T., Oh JE, McKenna CE, Kang MK, Shin KH, Tetradis S, Park NH, Kim RH. [Development of osteomucosal tissue constructs in vitro and bisphosphonate localization](#), 2014, *International Journal of Molecular Medicine*, 34(2):559-563.
- Kashemirov, B.A.; Bala, J.L.F.; Chen, X.; Ebetino, F.H.; Xia, Z.; Russell, R.G.G.; Coxon, F.P.; Roelofs, A.J.; Rogers, M.J.; McKenna, C.E. [Fluorescently Labeled Risedronate and Related Analogues: "Magic Linker" Synthesis](#). 2008, *Bioconjugate Chemistry*, 19(12): 2308-2310.
- Roelofs, A.J.; Coxon, F.P.; Ebetino, F.H.; Lundy, M.W.; Henneman, Z.J.; Nancollas, G.H.; Sun, S.; Blazewska, K.M.; Bala, J.L.F.; Kashemirov, B.A.; Khalid, A.B.; McKenna, C.E.; Rogers, M.J. [Fluorescent risedronate analogues reveal bisphosphonate uptake by bone marrow monocytes and localization around osteocytes in vivo](#). 2010, *Journal of Bone and Mineral Research*, 25(3): 606-616.
- Roelofs, A.J.; Stewart, C.A.; Sun, S.; Blazewska, K.M.; Kashemirov, B.A.; McKenna C.E.; Russell, R.G.G.; Rogers, M.J., Lundy, M.W.; Ebetino F.H.; Coxon, F.P. [Analysing the skeletal distribution of fluorescently-labelled bisphosphonates and lower affinity analogues in vivo](#). 2012 *Journal of Bone and Mineral Res.* 27(4): 835-847.
- Turek, J.; Ebetino, F. H.; Lundy, M.W.; Sun, S.; Kashemirov, B.A.; McKenna, C.E.; Gallant, M.A.; Plotkin, L.I.; Bellido, T.; Duan, X.; Triffitt, J.T.; Russell, R.G.G.; Burr, D.B.; Allen, M.R. [Bisphosphonate Binding Affinity Affects Drug Distribution in Both Intracortical and Trabecular Bone of Rabbits](#). 2012, *Calcified Tissue International*, 90(3): 202-210
- Hogoku, A.; Sun, S.; Park, S.; McKenna, C.E.; Nishimura, I. [Equilibrium-dependant bisphosphonate interaction with crystalline bone mineral explains anti-resorptive pharmacokinetics and prevalence of osteonecrosis of the jaw in rats](#). 2013 *Bone* 53:59-68.
- Vermeer, J.A.; Jansen, I.D.; Marthi, M.; Coxon, F.P.; McKenna, C.E.; Sun, S.; de Vries, T.J.; Everts, V. [Jaw bone marrow-derived osteoclast precursors internalize more bisphosphonate than long-bone marrow precursors](#). 2013 *Bone*. 57(1):242-251.

*For more references, please visit www.biovinc.com/references.

NOTES TO CUSTOMERS:

- BioVinc's fluorescent imaging reagents are offered for research purposes only, and are not intended for human use.
- The purchase of this product conveys to the buyer the limited, non-transferable right to use the purchased amount of the product and the components of the product in research conducted by the buyer. BioVinc's products are not available for resale or other commercial uses without a specific agreement from BioVinc LLC.