

# PRODUCT INFORMATION



## Sorafenib (tosylate)

Item No. 35612

CAS Registry No.: 475207-59-1

Formal Name: 4-[4-[[[4-chloro-3-(trifluoromethyl)phenyl]amino]carbonyl]amino]phenoxy]-N-methyl-2-pyridinecarboxamide, 4-methylbenzenesulfonate

Synonyms: BAY 43-9006 mono-*p*-tosylate, BAY 54-9085

MF:  $C_{21}H_{16}ClF_3N_4O_3 \cdot C_7H_8O_3S$

FW: 637.0

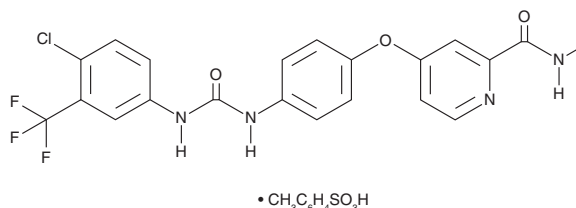
Purity:  $\geq 98\%$

UV/Vis.:  $\lambda_{max}$ : 266 nm

Supplied as: A solid

Storage:  $-20^\circ\text{C}$

Stability:  $\geq 4$  years



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

### Laboratory Procedures

Sorafenib (tosylate) is supplied as a solid. A stock solution may be made by dissolving the sorafenib (tosylate) in the solvent of choice, which should be purged with an inert gas. Sorafenib (tosylate) is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of sorafenib (tosylate) in these solvents is approximately 5 and 3 mg/ml, respectively.

### Description

Sorafenib is a multi-kinase inhibitor that inhibits Raf-1 and B-RAF ( $IC_{50}$ s = 6 and 22  $\mu\text{M}$ , respectively), as well as the receptor tyrosine kinases VEGFR2, VEGFR3, PDGFR $\beta$ , FLT3, and c-Kit ( $IC_{50}$ s = 90, 15, 20, 57, and 58 nM, respectively).<sup>1,2</sup> It is selective for these kinases over 12 other kinases, including ERK1, MEK1, EGFR, and HER2 ( $IC_{50}$ s =  $>10$   $\mu\text{M}$  for all).<sup>2</sup> Sorafenib inhibits proliferation of PLC/PRF/5 and HepG2 cells ( $IC_{50}$ s = 6.3 and 4.5  $\mu\text{M}$ , respectively) and induces apoptosis in these cells.<sup>3</sup> It completely inhibits tumor growth in a PLC/PRF/5 mouse xenograft model when administered at a dose of 30 mg/kg and reduces basic FGF-induced angiogenesis in a Matrigel™ assay *in vivo*.<sup>3,4</sup> Sorafenib (10  $\mu\text{M}$ ) induces ferroptotic cell death in HT-1080 fibrosarcoma cells, an effect that can be blocked by the ferroptosis inhibitors ferrostatin-1 (Item No. 17729), deferoxamine (Item No. 14595), and  $\beta$ -mercaptoethanol, but does not induce ferroptosis in a variety of other cancer cell lines.<sup>5,6</sup> It inhibits glutamate release by the system  $x_c^-$  cystine/glutamate transporter in HT-1080 cells when used at concentrations ranging from 2.5 to 10  $\mu\text{M}$ , decreases glutathione levels, and increases lipid peroxidation.<sup>5</sup> Sorafenib also inhibits replication of hepatitis C virus (HCV) in Huh7.5 cells ( $IC_{50}$  = 7.2  $\mu\text{M}$ ).<sup>7</sup> Formulations containing sorafenib have been used in the treatment of hepatocellular, renal cell, and thyroid carcinomas.

### References

1. Lyons, J.F., Wilhelm, S., Hibner, B., *et al.* *Endocr. Relat. Cancer* **8**(3), 219-225 (2001).
2. Wilhelm, S.M., Carter, C., and Tang, L. *Cancer Res.* **64**(19), 7099-7109 (2004).
3. Liu, L., Cao, Y., Chen, C., *et al.* *Cancer Res.* **66**(24), 11851-11858 (2006).
4. Murphy, D.A., Makonnen, S., Lassoued, W., *et al.* *Am. J. Pathol.* **169**(5), 1875-1885 (2006).
5. Dixon, S.J., Patel, D.N., Welsch, M., *et al.* *Elife* **3**, e02523 (2014).
6. Zheng, J., Sato, M., Mishima, E., *et al.* *Cell Death Dis.* **12**(7), 698 (2021).
7. Himmelsbach, K., Sauter, D., Baumert, T.F., *et al.* *Gut* **58**(12), 1644-1653 (2009).

#### 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.

#### WARRANTY AND LIMITATION OF REMEDY

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