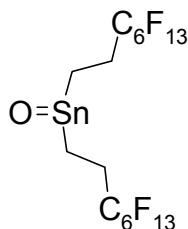


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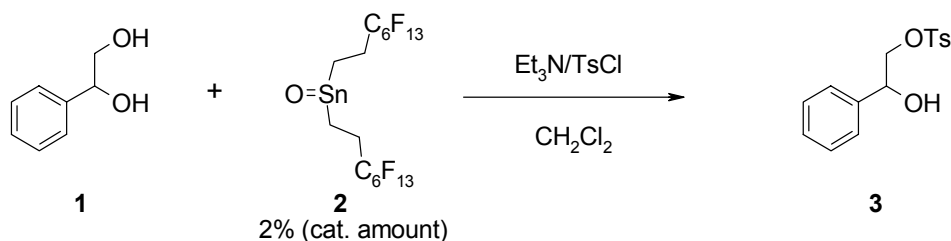
Bis(1H,1H,2H,2H-perfluorooctyl)tin oxide



Chemical Formula:	C <sub>16</sub> H <sub>8</sub> F <sub>26</sub> OSn
Formula Weight:	828.89
Description:	Tin Compound
CAS Number:	324063-66-3
Appearance:	White solid
Soluble in:	Ether, acetone, methylene chloride
Stability:	Stable at room temps, but storage in brown bottle under N <sub>2</sub> is recommended

## DESCRIPTION AND USES:

- Selective sulfonation of 1,2-diols using tin oxide as a catalyst has been reported by Martinelli and co-workers.<sup>1</sup>
- The above fluoros tin oxide was used in selective sulfonation of 1,2-diols with the advantage that the fluoros tin oxide can be recycled and reused easily using fluoros solid phase extraction (F-SPE).<sup>2,3,4</sup>



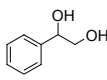
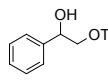
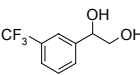
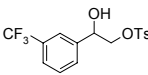


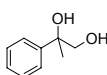
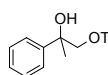
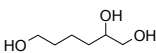
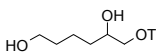
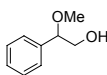
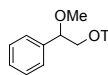
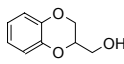
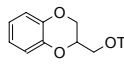
## TYPICAL PROCEDURE:<sup>2</sup>

1-Phenyl-1,2-ethane diol **1** (1 mmol) was dissolved in CH<sub>2</sub>Cl<sub>2</sub> (5 mL). Triethylamine (1 mmol) and tin oxide **2** (0.02 mmol) were added. Tosyl chloride was added and the solution was stirred at room temperature for 50 min. Water (1 mL) was added and the aqueous layer was washed with dichloromethane (2x10 mL). The combined organic layers were washed with H<sub>2</sub>O (2x25 mL) and brine (2x25 mL). The organic layer was dried over MgSO<sub>4</sub>. Removal of the solvent yielded a mixture of **3** and tin oxide. The crude mixture was transferred to a fluoros cartridge (FluoroFlash®). The column was washed with a mixture of 9:1 MeOH-H<sub>2</sub>O (3 mL), followed by THF (3 mL). Evaporation of the MeOH-H<sub>2</sub>O fraction yielded **3**. To retrieve the catalyst, evaporate the THF fraction. Some representative examples are shown in **Table 1**.

Additional fluoros tin oxides, having different fluoros chain lengths, are available. For a complete listing, please see our catalog.

## REFERENCES:

1. a) Martinelli, M. J.; Nayyar, N. K.; Moher, E.D.; Dhokte, U.P.; Pawlak, J.M.; Vaidyanathan, R. *Org. Lett.* **1999**, *1*, 447. b) Martinelli, M. J.; Vaidyanathan, R.; Van Khau, V. *Tetrahedron Lett.* **2000**, *41*, 3773.
2. Bucher, B. and Curran, D. P. *Tetrahedron Lett.* **2000**, *41*, 9617.
3. Curran, D. P. *Synlett* **2001**, 1488.
4. Please refer to FTI Application Note Fluorous Solid Phase Extraction.

Table 1: Monotosylation of alcohols with 2% fluoros tin oxide				
Entry	Substrate	Reaction Time <sup>a</sup>	Structure of monotosylate	Yield of monotosylate <sup>b</sup>
1 <sup>c</sup>		1-2		75-80%
2		1		77%
3		1		72%
4		1		70%
5		1		74%
6		23		84%
7		23		94%

a. Reactions were followed by TLC  
b. Isolated yields of purified product  
c. Reaction time and yield ranges for multiple runs with recovered tin oxide