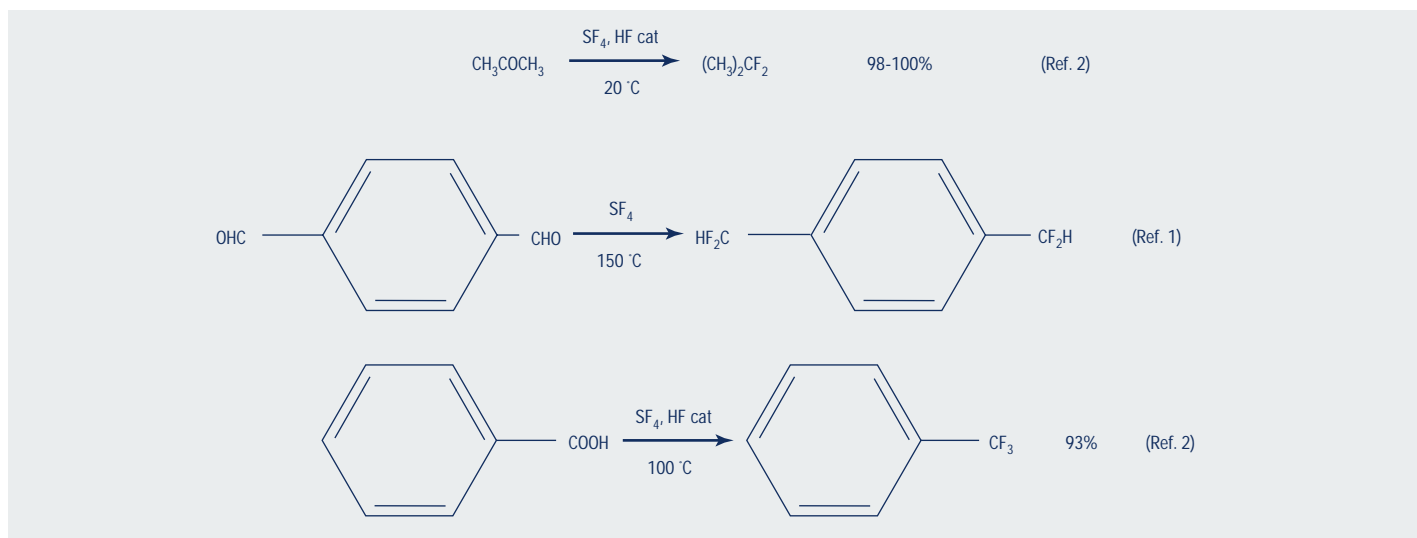


SULFUR TETRAFLUORIDE FOR DEOXOFLUORINATION

Sulfur tetrafluoride, SF₄, is a gas

with a boiling point of -40 °C. Air Products and Chemicals, Inc., supplies SF₄ under pressure in 90-lb., 30-lb., and 5-lb. cylinders. Well known as a deoxofluorinating agent, SF₄ is

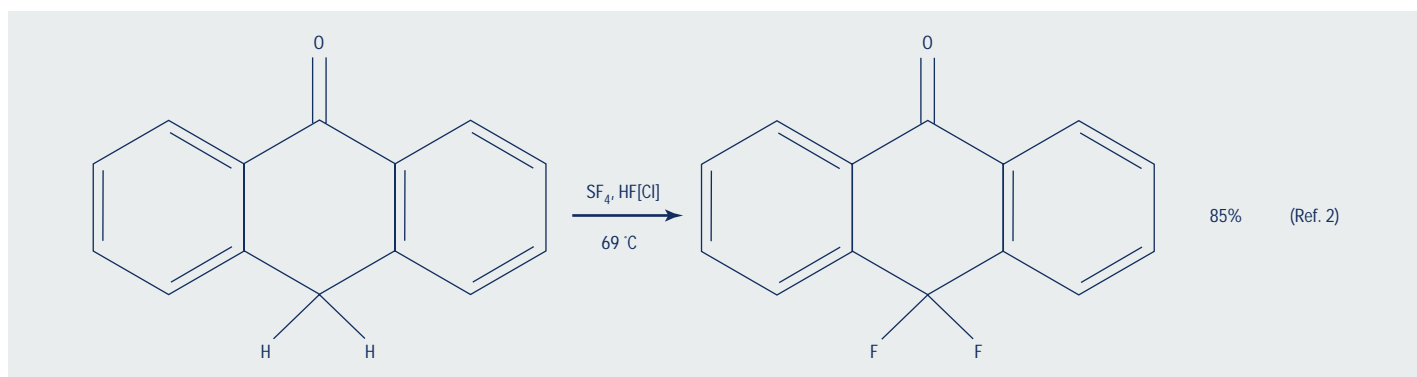
particularly useful for the conversion of aldehydes, ketones and carboxylic acids into the respective fluorinated compounds in the presence of HF and other Lewis acid catalysts.



Because SF₄ gives a mixture of products when reacted with simple alcohols, the fluorination process is considered much less effective.¹ Such transformations can, however, be

readily accomplished with Deoxo-Fluor™ or DAST reagents. In the presence of catalytic amounts of chlorine, SF₄ can, in some cases, lead to the substitution of carbon-chlorine

and even some carbon-hydrogen bonds with fluorine. The specific example below involves the fluorination of the bridging methylene group in anthrone.²



Sulfur tetrafluoride is a highly toxic gas, which, in many cases, is used in reactions that are conducted at elevated temperatures under pressure. APCI Fluorination specialists not only

have the facilities to produce SF₄, but also to use it safely in innovative deoxofluorination processes. Surprisingly, some of these reactions are carried out at near ambient

conditions. We welcome your inquiries for both the supply of SF₄ and custom synthesis chemistry. **Additional product information follows.**

Sulfur Tetrafluoride (SF₄)

A highly toxic, colorless, nonflammable liquefied gas with a sulfur-like odor. Reacts with water to form hydrofluoric acid.

Toxicity: Highly toxic. Severely irritating and corrosive to tissues, producing burns typical of hydrofluoric acid.

TWA: 0.1 ppm ceiling (OSHA)

Compatible Materials: Moisture promotes corrosion. All materials must be resistant to attack by hydrofluoric acid. Stainless steel, nickel, and Monel metals are the preferred materials of construction.

Molecular Weight: 108.1 g/mole

Specific Volume at 70 °F and 1 atm: 3.6 ft.³/lb.

DOT Hazard Class: Poison Gas (2.3)

DOT Label: Poison Gas

DOT ID No.: UN 2418

CAS No.: 7783-60-0

Ordering Information

Specifications	Cylinder Size	Cylinder Dimensions (in.)	Cylinder Pressure at 70 °F(psig)	Contents lbs. (kgs)	Standard Valve Outlet (CGA)	Product Number
Technical 94.0%* (Liquid Phase) *Excluding HF	B	9 x 51	140	90 (40.8)	330	J35-8-878000
	C	7 x 33	140	30 (13.6)	330	J03-Y-878000
	D	4 x 18	140	5 (2.3)	330	J05-Q-878000

Recommended Equipment

Description	Product Number	Delivery Pressure Range (psig)
Single-Stage Regulator	E11-C330C330	0-50
Manual Control Valve	E30-311330	
Valve Wrench	E99-38WRENCH	
Purge Assembly	E99-CPAM330	

¹ Boswell, Jr., G. A., Ripka, W. C. Scribner, R. M., Tullock, C. W., in Organic Reactions, 21, 1974, John Wiley and Sons, p 1-124.

² Burmakov, A. I. Kunshenko, B. V., Alekseeva, L. A., Yagupolskii, L. M., in New Fluorinating Agents in Organic Synthesis, L. German and S. Zemskov (Eds), Springer Verlag, Heidelberg, NY, 1989, p 197-253.