

## PRODUCT OVERVIEW

Fluorinated Products	Chemical Name	Abbrev	CAS Number
<b>Acid Chlorides</b>	Trifluoroacetyl chloride	TFAC	354-32-5
<b>Alcohols</b>	2,2,2-Trifluoroethanol	TFE	75-89-8
<b>Alkanes</b>	1,1-Dichloro-2,2,2-trifluoroethane (SOLKANE® 123)	S123	306-83-2
	1,1,1,3,3-Pentafluorobutane (SOLKANE® 365mfc)	S365mfc	406-58-6
<b>Amines</b>	2,2,2-Trifluoroethylamine	TFEA	753-90-2
<b>Acids</b>	Chlorodifluoroacetic acid	CDFA	76-04-0
	Trifluoroacetic acid	TFA	76-05-1
	Trifluoromethanesulfonic acid	TA	1493-13-6
<b>Anhydrides</b>	Trifluoroacetic acid anhydride	TFAH	407-25-0
	Trifluoromethanesulfonic anhydride	TAA	358-23-6
<b>Esters and Acetoacetates</b>	Difluoroacetic acid ethyl ester	DFAEt	454-31-9
	Trifluoroacetic acid ethyl ester	TFAEt	383-63-1
	Trifluoroacetic acid isopropyl ester	TFAIP	400-38-4
	Trifluoroacetic acid methyl ester	TFAMe	431-47-0
<b>Ketones</b>	4-Ethoxy-1,1,1-trifluoro-3-buten-2-one	ETFBO	59938-06-6
	1,1,1-Trifluoroacetone	TFK	421-50-1
<b>Heterocycles</b>	3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxylate	DFMPA	176969-34-9
	1-Methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxylic acid	TFMPA	113100-53-1
<b>Solvents for Li-Ion batteries</b>	Monofluoroethylene Carbonate	FIEC	114435-02-8

Should you have any questions, please contact us: [emea.fluorides@solway.com](mailto:emea.fluorides@solway.com)

## WORLDWIDE PRESENCE

With its two production plants in Europe and a strong tolling network in Asia, Solvay is the largest producer of fluoro-aliphatic derivatives.

Our dedicated R&I Team develops new molecules from two product trees, and tailor-made chemical routes to meet customers' ambitions.

## INDUSTRIAL FOOTPRINT



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**SOLVAY**  
asking more from chemistry®

**ORGANICS**



Organic Fluorinated  
Building Blocks  
Raw materials & Advanced Intermediates

# MARKETS & APPLICATIONS

## Organic fluorinated building blocks: raw materials & advanced intermediates

The use of organic fluorinated intermediates has grown to become a key component for many block-busters in the agrochemical and pharmaceutical industry.

Using our long-term knowledge, experience and capabilities in fluorine chemistry, we provide you with excellent products based on efficient production processes.

Ca. 30% of drugs and 50% of crop protection products under development contain fluorine. Capitalizing on an extensive expertise in fluorine chemistry, we provide fluorinated molecules, from raw material to active ingredients, based on state of the art production processes.



## AGROCHEMICALS

Fluorine confers differentiating biological properties that makes its insertion on organic molecules attractive, as confirmed by the increasing number of fluorinated intermediates under development in the agro science industry (appr. 50%).

We pursue a focus strategy to develop competitive processes that are safe to operate, sustainable and yield the required quality for existing fluorinated molecules for the agrochemicals industry.

We develop new routes to existing commercial fluorinated molecules that are cost competitive thanks to our expertise in fluorine chemistry.

We produce in-house or through our toller network, following the most stringent HSE standards developed at Solvay, based on a technical package released from our research and development center.



## INDUSTRIAL APPLICATIONS

### Electronic and Coating Additives

Our aliphatic fluorinated building blocks can be used for a variety of applications such as:

- Electronic conducting materials
- Coating materials for flat panel displays, touch screens and finger print scanners

### Solvents and Catalysts

Fluorinated acids, alcohols as well as our ketones have excellent solvent properties.

They are used as:

- Solvents in chemical reactions
- Catalyst for silicone and alkylation reaction

## PRODUCTS

We offer a broad range of fluorinated products such as:

- Trifluoroacetylchloride
- Trifluoroacetic acid and its derivatives
- Triflic acid and its derivatives

## PHARMACEUTICALS

We deliver the pharmaceutical industry with fluorinated raw materials from our commercial CF<sub>2</sub>/CF<sub>3</sub> product tree.

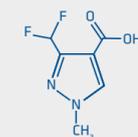
A growing number of blockbuster drugs contain fluorine atoms:

- Analgesics
- Anesthetics
- Antibiotics
- Anticancer agents
- Antiviral
- Anti-HIV

- ETFBO and downstream products

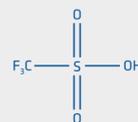
- Fluorinated heterocycles Pyrazoles, Pyrimidinones and Pyridones

### CF<sub>2</sub>-Key Building Block for Several SDHI Fungicides



**DFMPA – 3-(difluoromethyl)-1-methyl-1H-pyrazole-4-carboxylic acid**

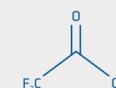
### Super Acid for Catalysis Needs



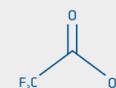
**TA – Trifluoromethane sulfonic acid or Triflic Acid**

Triflic acid is the strongest Brønsted acid available at industrial scale

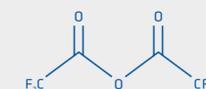
### Building Blocks for Increasing Efficiency of Active Ingredients



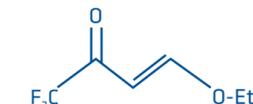
**TFAC – Trifluoroacetyl chloride**



**TFA – Trifluoroacetic acid**



**TFAH – Trifluoroacetic acid anhydride**



## ETFBO

### 4-ETHOXY-1,1,1-TRIFLUORO-3-BUTEN-2-ONE

A versatile intermediate with multiple reactive centers that grant you access to a wide variety of products.

## ETFBO DOWNSTREAM PRODUCTS

- TFPZO 3-(Trifluoromethyl)-1H-pyrazole
- ETFPMOC Ethyl 2-oxo-6-(trifluoromethyl)-1,2-dihydropyridine-3-carboxylate
- TFPMO 6-(Trifluoromethyl)-pyrimidin-2(1H)-one
- ATFBO Family of (Z)-4-(Dialkyl amino)-1,1,1-Trifluorobut-3-en-2-one

## TECHNOLOGIES

- Fluorinations with elemental fluorine (F<sub>2</sub>)
- Gas and liquid phase fluorination (HF, NR<sub>3</sub>·HF)
- Photo-oxidation

