



**Introduction of
P&M-Invest in Moscow
Organofluorine chemistry:
science, technologies, manufacture since 1987**

中間物商事株式会社

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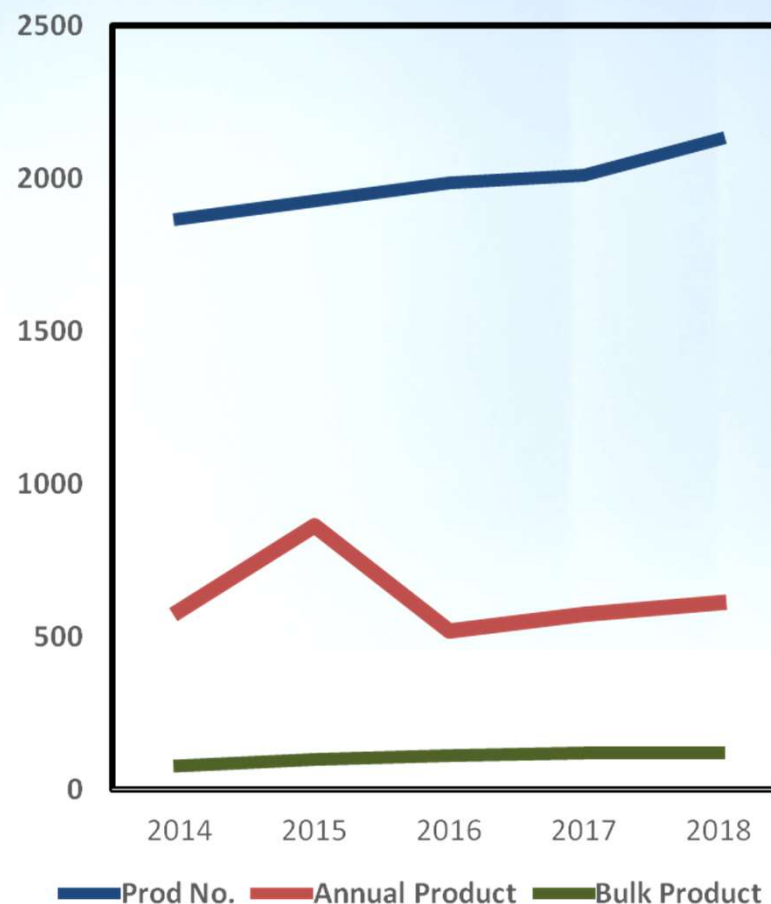
E-mail : info@chukan.co.jp

Saving time

1. Around 2100 fluorine compounds are registered in production manuals
2. Around 900 compounds are in stock, and around 600 compounds are produced annually
3. Around 50 fluorine compounds are added to our list annually
4. Around 120 bulk products are manufactured



History of Products No.



Q&P Technology Co.,Ltd.



1. A joint venture company of Qi-Chem Co., Ltd. (production) and P&M-Invest Ltd. (technology), located in Dalian-China
2. Q&P technology supplies Hexafluorobenzene, Pentafluorophenol (99.7 HPLC%) and Chloropentafluorobenzene to the world market.



Q&P Technology Co., Ltd.



3. Merchandises

No.	Chemical Name	Chemical structure	CAS RN	Capacity (MT/Y)
1	Hexafluorobenzene	C_6F_6	392-56-3	200
2	Pentafluorophenol	C_6F_5OH	771-61-9	150
3	Chloropentafluorobenzene	C_6F_5Cl	344-07-0	200

4. Company general view

Establishment	2017. 06
Invested Capital	10,350,000 RMB
Headquarters	19-8 DD4 Street, Economic and Technical Zone, Dalian P.R.China
URL	www.qp-technology.com

1. Hexafluorobenzene; C₆F₆

*A mother chemical for various functional polyfluoroaromatics.

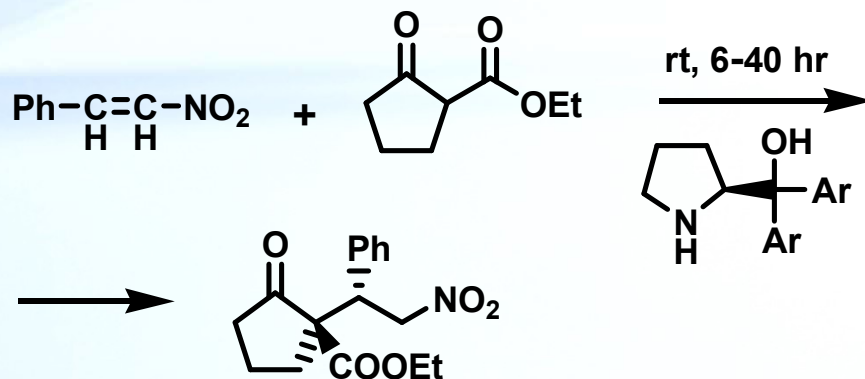
*An unique solvent which is miscible with many hydrocarbon (polar) solvents beside perfluoro-solvent character.

Ps; C₆F₆=4.53, C₆F₁₄=0.00, (CH₃)₂CHOH=7.85, C₆H₆=6.95

(Coordination Chemistry Reviews 190-192(1999) 587-605)

*Stereoselective Michael addition reaction solvent

π-π interaction between catalyst and the solvent amplify stereoselectivity. (Chem. Comm., 2012, 48, 1650-1652)

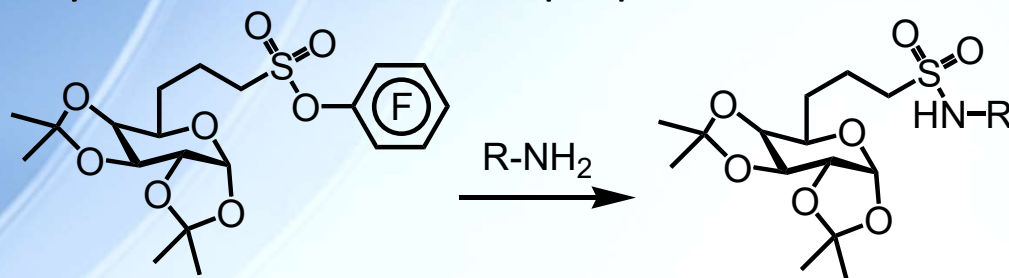


solvent	dr	er
CH ₃ C ₆ H ₅	4:1	58:42
CF ₃ C ₆ H ₅	5:1	73:27
C ₆ F ₆	24:1	95:5

2. Pentafluorophenol (PFP); C₆F₅OH

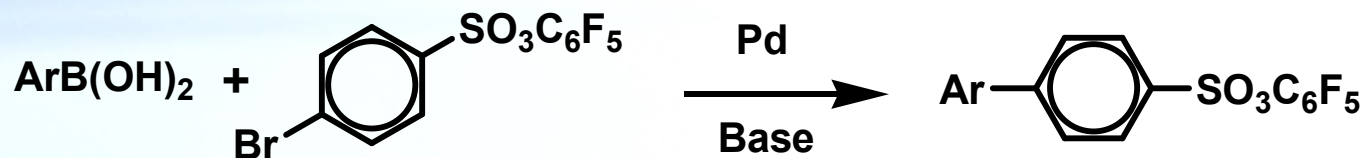


An active ester of PFP proceeds condensation process. It becomes irreplaceable sulfoamide synthetic reagent when the corresponding sulfonyl chloride can not be prepared.



PFP-sulfonate ester as protecting group allows new biaryl- and heteroaryl by use of the Suzuki-Miyaura reaction.

(Organic Letters 2005, Vol.7, No.5, 843-846)



(reactivity order ArI > ArSO₂Cl > ArBr >> ArCl)



Fluorex Co., Ltd.

1. A group company of P&M-Invest. Mainly working at chemicals, pharmaceutical reagents and equipments import/export trading business.
2. A gateway for Russian Fluorine Chemicals and General Pharmaceutical Industry.
3. Company general view

Establishment	2004.01
Headquarters	193079, Novoselov str., 8, liter A, office 668, Saint-Petersburg, Russia.
Tel	+7-911-225-6050

Kupavna Dep. for Bulk production



1. Facilities

No.	Facilities	Volume	Number
1	GL reactor-distilator	400-1000L	4
2	SUS 321 reactor	250L	1
3	Glass reactor	30-100L	3
4	PP reactor	600L	1
5	SUS 321 Tubular continuous reactor	1MT/month	2
6	SUS 321 Solid pyrolysis reactor	160L	1
7	Glass rectifier	100L	4

2. Kupavna Dep. general view

Location: Russia, 117449, Moscow region, Karier street D.2A

Total area: 600 m² manufacturing area: 220 m².

Operation; 12hr*2 shifts * 3 teams, 335 days /year

Bulk Products 2018-2019



Kupavna major bulk products

Octafluoroadipodinitrile

$\text{NC}(\text{CF}_2)_4\text{CN}$ Capacity; 40 kg/month
CAS RN; 376-53-4

Pentafluoropropionic anhydride

$(\text{C}_2\text{F}_5\text{CO})_2\text{O}$ Capacity; 400 kg/month
CAS RN; 356-42-3

Heptafluorobutyric anhydride

$(\text{C}_3\text{F}_7\text{CO})_2\text{O}$ Capacity; 600 kg/month
CAS RN; 336-59-4

Bulk Products 2018-2019



Kupavna major bulk products

Difluoroacetonitrile



Capacity; 70 kg/month

CAS RN; 359-12-6

Trifluoromethyl iodide



Capacity; 100 kg/month

CAS RN; 2314-97-8

Hepatafluoro-2-iodopropane



Capacity; 300 kg/month

CAS RN; 677-69-0



Bulk Products 2018-2019

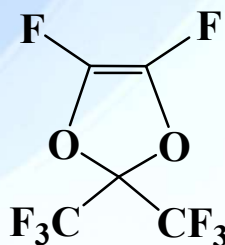
Kupavna major bulk products

Pentafluoropentanol

$C_2F_5(CH_2)_3OH$ Capacity; 130 kg/month

CAS RN; 148043-73-6

Perfluoro(2,2-dimethyl-1,3-dioxole)



Capacity; 100 kg/month

CAS RN; 37697-64-6

2,3,5,6-Tetrafluoro-4-(trifluoromethyl) benzyl bromide

$CF_3-C_6F_4-CH_2Br$ Capacity; 200 kg/month

CAS RN; 76437-40-6



Bulk Products 2018-2019

Kupavna major bulk products

Pentafluorothiophenol



Capacity; 200 kg/month

CAS RN; 771-62-0

Trifluoroacetaldehyde methyl hemiacetal



Capacity; 100 kg/month

CAS RN; 431-46-9

Fluoromethy 1,1,1,3,3,3-hexafluoroisopropyl ether



Capacity; 500 kg/month

CAS RN; 28523-86-6

Hot Products 2018-2019



Active ester acrylates for photoresist

1,1-Bis(trifluoromethyl)-2,2,3,3,3-pentafluoropropyl 2-fluoroacrylate

$\text{CH}_2=\text{CFCOOC}(\text{CF}_3)_2\text{C}_2\text{F}_5$ CAS RN; 2043218-06-8

2,3,4,5,6-Pentafluorophenyl acrylate

$\text{CH}_2=\text{CHCOOC}_6\text{F}_5$ CAS RN; 71195-85-2

Heptafluoroisopropyl acrylate

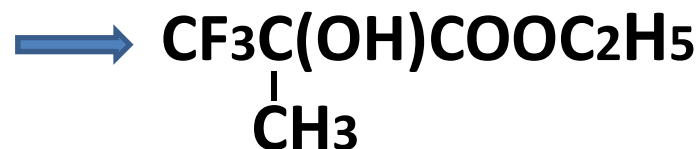
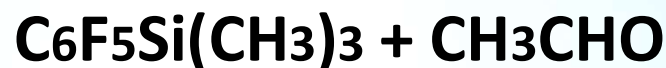
$\text{CH}_2=\text{CHCOOCF}(\text{CF}_3)_2$ CAS RN; 13057-08-4



In-house applications of $-CF_3$, $-CHF_2$, $-C_6F_5$ introducing reagents

CF_3SO_2Cl , CF_3SO_2Br ,
 $CF_3Si(CH_3)_3$,
 $CF_3Si(C_2H_5)_3$,
 $BrCF_2Si(CH_3)_3$
 $CHF_2Si(CH_3)_3$,
 $C_2H_5OCOCF_2Si(CH_3)_3$,
 $FSO_2CF_2COOSi(CH_3)_3$,
 $CF_3CH(OH)OCH_3$,
 $C_6F_5Si(CH_3)_3$,
 CF_3I
 $CF_2=CFOCF_2CF_2Si(CH_3)_3$

Examples;





＜お問合せ＞

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