

Revision Date 15-Nov-2013

Revision Number 4

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Product Description:** 4'-Fluorobiphenyl-4-sulfonyl chloride, 97%  
**Cat No. :** 450320000; 450320010; 450320050  
**Synonyms** 4'-Fluoro[1,1'-biphenyl]-4-sulfonyl chloride; 4-(4-Fluorophenyl)benzenesulfonyl chloride  
**CAS-No** 116748-66-4  
**Molecular Formula** C12 H8 Cl F O2 S

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Laboratory chemicals  
**Uses advised against** No Information available

### 1.3. Details of the supplier of the safety data sheet

**Company** Acros Organics BVBA  
 Janssen Pharmaceuticaaan 3a  
 2440 Geel, Belgium  
**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11  
 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No.**US**:001-800-424-9300 / **Europe**:001-703-527-3887

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### CLP Classification - Regulation (EC) No 1272/2008

##### **Physical hazards**

Based on available data, the classification criteria are not met

##### **Health hazards**

Skin Corrosion/irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity - (single exposure)	Category 3

##### **Environmental hazards**

Based on available data, the classification criteria are not met

#### Classification according to EU Directives 67/548/EEC or 1999/45/EC

**Symbol(s)** C - Corrosive  
**R-phrases(s)** R29 - Contact with water liberates toxic gas  
 R34 - Causes burns  
 R37 - Irritating to respiratory system

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

## SECTION 2: HAZARDS IDENTIFICATION

### 2.2. Label elements



Signal Word

Danger

#### Hazard Statements

H314 - Causes severe skin burns and eye damage

H335 - May cause respiratory irritation

EUH029 - Contact with water liberates toxic gas

#### Precautionary Statements

P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection

P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

P310 - Immediately call a POISON CENTER or doctor/ physician

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower

P402 + P404 - Store in a dry place. Store in a closed container

### 2.3. Other hazards

No information available.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008	DSD Classification - 67/548/EEC
4'-Fluoro(1,1'-biphenyl)-4-sulfonyl chloride	116748-66-4		>95	Skin Corr. 1B (H314) Eye Dam. 1 (H318) STOT SE3 (H335) (EUH029)	R29 C;R34 Xi;R37

For the full text of the R-phrases and H-Statements mentioned in this Section, see Section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

#### General Advice

Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

#### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.

#### Skin Contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

#### Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. Immediate medical attention is required. Drink plenty of water.

4'-Fluorobiphenyl-4-sulfonyl chloride, 97%

<b>Inhalation</b>	Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Call a physician or Poison Control Center immediately.
<b>Protection of First-aiders</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination

**4.2. Most important symptoms and effects, both acute and delayed**

Causes burns by all exposure routes. . Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

**4.3. Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Treat symptomatically.

**SECTION 5: FIREFIGHTING MEASURES****5.1. Extinguishing media****Suitable Extinguishing Media**

CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam.

**Extinguishing media which must not be used for safety reasons**

Water. Contact with water liberates toxic gas.

**5.2. Special hazards arising from the substance or mixture**

The product causes burns of eyes, skin and mucous membranes. Contact with water liberates toxic gas.

**Hazardous Combustion Products**

Hydrogen chloride gas, Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Chlorine, Hydrogen fluoride, Sulfur oxides, Thermal decomposition can lead to release of irritating gases and vapors.

**5.3. Advice for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**SECTION 6: ACCIDENTAL RELEASE MEASURES****6.1. Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Evacuate personnel to safe areas. Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**6.2. Environmental precautions**

Do not allow material to contaminate ground water system. Should not be released into the environment.

**6.3. Methods and material for containment and cleaning up**

Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Do not expose spill to water.

**6.4. Reference to other sections**

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7: HANDLING AND STORAGE**

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not ingest. Use only under a chemical fume hood. Wear personal protective equipment. Do not allow contact with water. Wash hands before breaks and immediately after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

To maintain product quality. Store under an inert atmosphere.

### 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Exposure limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

#### Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

#### Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust

**Derived No Effect Level (DNEL)** No information available.

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				
Inhalation				

**Predicted No Effect Concentration (PNEC)** No information available.

### 8.2. Exposure controls

#### Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

#### Personal protective equipment

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

## 4'-Fluorobiphenyl-4-sulfonyl chloride, 97%

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Natural rubber	See manufacturers recommendations	-	EN 374	(minimum requirement)
Butyl rubber				
Nitrile rubber				
Neoprene				
PVC				

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection** Long sleeved clothing

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators  
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly.

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced..  
**Recommended Filter type:** Particulates filter conforming to EN 143.

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
**Recommended half mask:-** Valve filtering: EN405 or Half mask: EN140 plus filter, EN 141  
When RPE is used a face piece Fit Test should be conducted.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	White - Off-white	
<b>Physical State</b>	Solid.	
<b>Odor</b>	No information available	
<b>Odor Threshold</b>	No data available	
<b>pH</b>	No information available.	
<b>Melting Point/Range</b>	82 - 84°C / 179.6 - 183.2°F	Measured
<b>Softening Point</b>	No data available	
<b>Boiling Point/Range</b>	No information available.	
<b>Flash Point</b>	No information available.	<b>Method -</b> No information available.
<b>Evaporation Rate</b>	Not applicable	Solid
<b>Flammability (solid,gas)</b>	No information available.	
<b>Explosion Limits</b>	No data available.	
<b>Vapor Pressure</b>	No data available	
<b>Vapor Density</b>	Not applicable	Solid
<b>Specific Gravity / Density</b>	No data available	
<b>Bulk Density</b>	No data available	
<b>Water Solubility</b>	hydrolyses	
<b>Solubility in other solvents</b>	No information available.	

4'-Fluorobiphenyl-4-sulfonyl chloride, 97%

Partition Coefficient (n-octanol/water)

Autoignition Temperature	Not applicable	
Decomposition temperature	No data available	
Viscosity	Not applicable	Solid
Explosive Properties	No information available.	
Oxidizing Properties	No information available.	

**9.2. Other information**

Molecular Formula	C12 H8 Cl F O2 S
Molecular Weight	270.71

**SECTION 10: STABILITY AND REACTIVITY****10.1. Reactivity**

Yes Water reactive

**10.2. Chemical stability**

Stable under recommended storage conditions. Contact with water liberates toxic gas.

**10.3. Possibility of hazardous reactions**

Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

**10.4. Conditions to avoid**

Incompatible products, Excess heat, Exposure to moist air or water.

**10.5. Incompatible materials**

Water. Bases. Alcohols. Amines. Strong oxidizing agents.

**10.6. Hazardous decomposition products**Hydrogen chloride gas, Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Chlorine, Hydrogen fluoride, Sulfur oxides, Thermal decomposition can lead to release of irritating gases and vapors.**SECTION 11: TOXICOLOGICAL INFORMATION****11.1. Information on toxicological effects**

Product Information	No acute toxicity information is available for this product
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**(a) acute toxicity;**

Oral	No data available
Dermal	No data available
Inhalation	No data available

**(b) skin corrosion/irritation;**

Category 1 B

**(c) serious eye damage/irritation;**

Category 1

**(d) respiratory or skin sensitization;**

Respiratory	No data available
Skin	No data available

**(e) germ cell mutagenicity;**

No data available

(f) carcinogenicity;	No data available
	There are no known carcinogenic chemicals in this product
(g) reproductive toxicity;	No data available
(h) STOT-single exposure;	Category 3
(i) STOT-repeated exposure;	No data available
Target Organs	No information available.
(j) aspiration hazard;	Not applicable Solid
<b>Other Adverse Effects Symptoms / effects, both acute and delayed</b>	The toxicological properties have not been fully investigated. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

## SECTION 12: ECOLOGICAL INFORMATION

<b>12.1. Toxicity</b>	
<b>Ecotoxicity effects</b>	Reacts with water so no ecotoxicity data for the substance is available.
<b>12.2. Persistence and degradability</b>	No information available
Persistence	Persistence is unlikely, based on information available.
Degradability	Decomposes in contact with water.
Degradation in sewage treatment plant	No information available.. Decomposes in contact with water.
<b>12.3. Bioaccumulative potential</b>	Product does not bioaccumulate due to reaction with water
<b>12.4. Mobility in soil</b>	Hydrolyses. Is not likely mobile in the environment.
<b>12.5. Results of PBT and vPvB assessment</b>	No data available for assessment
<b>12.6. Other adverse effects</b>	
Endocrine Disruptor Information	This product does not contain any known or suspected endocrine disruptors
Persistent Organic Pollutant	This product does not contain any known or suspected substance
Ozone Depletion Potential	This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

<b>13.1. Waste treatment methods</b>	
<b>Waste from Residues / Unused Products</b>	Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.
<b>Contaminated Packaging</b>	Dispose of this container to hazardous or special waste collection point..
<b>European Waste Catalogue (EWC)</b>	According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
<b>Other Information</b>	Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not dispose of waste into sewer. Large amounts will affect pH and harm aquatic organisms.

## SECTION 14: TRANSPORT INFORMATION

**SECTION 14: TRANSPORT INFORMATION****IMDG/IMO**

<b>14.1. UN number</b>	3261
<b>14.2. UN proper shipping name</b> Technical Shipping Name	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (4'-Fluorobiphenyl-4-sulfonyl chloride)
<b>14.3. Transport hazard class(es)</b>	8
<b>14.4. Packing group</b>	III

**ADR**

<b>14.1. UN number</b>	3261
<b>14.2. UN proper shipping name</b> Technical Shipping Name	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (4'-Fluorobiphenyl-4-sulfonyl chloride)
<b>14.3. Transport hazard class(es)</b>	8
<b>14.4. Packing group</b>	III

**IATA**

<b>14.1. UN number</b>	3261
<b>14.2. UN proper shipping name</b> Technical Shipping Name	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.* (4'-Fluorobiphenyl-4-sulfonyl chloride)
<b>14.3. Transport hazard class(es)</b>	8
<b>14.4. Packing group</b>	III

<b>14.5. Environmental hazards</b>	No hazards identified
<b>14.6. Special precautions for user</b>	No special precautions required
<b>14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable, packaged goods

**SECTION 15: REGULATORY INFORMATION****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

**International Inventories** X = listed

**National Regulations**

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment  
Take note of Dir 94/33/EC on the protection of young people at work  
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

**15.2. Chemical safety assessment**

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

**SECTION 16: OTHER INFORMATION****Full text of R-phrases referred to under sections 2 and 3**

R29 - Contact with water liberates toxic gas  
R34 - Causes burns  
R37 - Irritating to respiratory system

**Full text of H-Statements referred to under sections 2 and 3**

H314 - Causes severe skin burns and eye damage  
H318 - Causes serious eye damage  
H335 - May cause respiratory irritation  
EUH029 - Contact with water liberates toxic gas

### Legend

<b>CAS</b> - Chemical Abstracts Service	<b>TSCA</b> - United States Toxic Substances Control Act Section 8(b) Inventory
<b>EINECS/ELINCS</b> - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances	<b>DSL/NDSL</b> - Canadian Domestic Substances List/Non-Domestic Substances List
<b>PICCS</b> - Philippines Inventory of Chemicals and Chemical Substances	<b>ENCS</b> - Japan Existing and New Chemical Substances
<b>IECSC</b> - China Inventory of Existing Chemical Substances	<b>AICS</b> - Australian Inventory of Chemical Substances
<b>KECL</b> - Existing and Evaluated Chemical Substances	<b>NZIoC</b> - New Zealand Inventory of Chemicals
<b>WEL</b> - Workplace Exposure Limit	<b>TWA</b> - Time Weighted Average
<b>ACGIH</b> - American Conference of Industrial Hygiene	<b>IARC</b> - International Agency for Research on Cancer
<b>DNEL</b> - Derived No Effect Level	<b>PNEC</b> - Predicted No Effect Concentration
<b>RPE</b> - Respiratory Protective Equipment	<b>LD50</b> - Lethal Dose 50%
<b>LC50</b> - Lethal Concentration 50%	<b>EC50</b> - Effective Concentration 50%
<b>NOEC</b> - No Observed Effect Concentration	<b>POW</b> - Partition coefficient Octanol:Water
<b>PBT</b> - Persistent, Bioaccumulative, Toxic	<b>vPvB</b> - very Persistent, very Bioaccumulative
<b>ADR</b> - European Agreement Concerning the International Carriage of Dangerous Goods by Road	<b>ICAO/IATA</b> - International Civil Aviation Organization/International Air Transport Association
<b>IMO/IMDG</b> - International Maritime Organization/International Maritime Dangerous Goods Code	<b>MARPOL</b> - International Convention for the Prevention of Pollution from Ships
<b>OECD</b> - Organisation for Economic Co-operation and Development	<b>ATE</b> - Acute Toxicity Estimate
<b>BCF</b> - Bioconcentration factor	<b>VOC</b> - Volatile Organic Compounds

### Key literature references and sources for data

Suppliers safety data sheet,  
Chemadvisor - LOLI,  
Merck index,  
RTECS

### Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.  
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.  
First aid for chemical exposure, including the use of eye wash and safety showers.

<b>Revision Date</b>	15-Nov-2013
<b>Revision Summary</b>	
<b>Reason for revision</b>	(M)SDS sections updated, 2, 3, 7, 8, 9, 11, 12, 14, 16.

**This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

### Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of Safety Data Sheet**