

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Date of issue: 17/11/2015

EM-4028

Revision date:

Version: 1.0

SECTION 1: Identification of the sul	ostance/mixture and of the company/undertaking
1.1. Product identifier	
Product form	: Mixture
Product name.	: 2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 MG/ML IN ACETONE
CAS No	: 388-82-9
Product code	: EM-4028
Formula	: C12H8F2
1.2. Relevant identified uses of the sub	stance or mixture and uses advised against
1.2.1. Relevant identified uses	
Industrial/Professional use spec	: For professional use only.
1.2.2.Uses advised againstNo additional information available	
1.3. Details of the supplier of the safety	data sheet
Cambridge Isotope Laboratories, Inc. 50 Frontage Road Andover, MA 01810 USA	
USA: 1-800-322-1174 Int: 1-978-749-8000 cilsales@isotope.com www.isotope.com	
Emergency telephone number	
Emergency numbers:	
Chemtrec: 1-800-424-9300 (24 hours) International: 1-703-741-5970 (24 hours)	
SECTION 2: Hazards identification	
2.1. Classification of the substance or r	nixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2 H225 Eye Irrit. 2 H319 STOT SE 3 H336

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Muta.Cat.3; R68 F; R11 Xi; R36 R66 R67 Full text of R-phrases: see section 16

GHS-US classification

Flam. Liq. 2 H225 Eye Irrit. 2A H319 STOT SE 3 H336

Adverse physicochemical, human health and environmental effects

Liver, Kidney.

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2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

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Name	Product identifier	%	Classification according to Directive 67/548/EEC
ACETONE UNLABELED	(CAS No) 67-64-1 (EC no) 200-662-2 (EC index no) 606-001-00-8	99.37	F; R11 Xi; R36 R67 R66
2,2'-DIFLUOROBIPHENYL UNLABELED	(CAS No) 388-82-9 (EC no) 206-863-1	0.63	Not classified
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
ACETONE UNLABELED	(CAS No) 67-64-1 (EC no) 200-662-2 (EC index no) 606-001-00-8	99.37	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336
2,2'-DIFLUOROBIPHENYL UNLABELED	(CAS No) 388-82-9 (EC no) 206-863-1	0.63	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
Name	Product identifier	%	GHS-US classification
ACETONE UNLABELED	(CAS No) 67-64-1	99.37	Flam. Liq. 2, H225 Eye Irrit. 2A, H319 STOT SE 3, H336

Full text of R-, H- and EUH-phrases: see section 16

SECTION 4: First aid measures	
4.1. Description of first aid measures	
First-aid measures general	: Move out of dangerous area. Consult a physician and show this safety data sheet.
First-aid measures after inhalation	: Remove to fresh air and keep at rest in a position comfortable for breathing.
First-aid measures after skin contact	: Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water.
First-aid measures after eye contact	: Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for several minutes.
First-aid measures after ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
4.2. Most important symptoms and effe	ects, both acute and delayed
Symptoms/injuries	: May cause damage to organs (kidneys, liver) (kidneys, liver).
Symptoms/injuries after inhalation	 Harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness.
Symptoms/injuries after skin contact	: Harmful if absorbed through skin. Prolonged or repeated contact can result in drying of the skin which may result in skin irritation.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: Harmful if swallowed.
4.3. Indication of any immediate medic	al attention and special treatment needed
No additional information available	

SECTION 5: Firefighting measures	
5.1. Extinguishing media	
Suitable extinguishing media	: Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
5.2. Special hazards arising from the su	bstance or mixture
Fire hazard	: Highly flammable liquid and vapour.
Explosion hazard	: May form flammable/explosive vapour-air mixture.
Reactivity	: Vapors may form explosive mixture with air.
5.3. Advice for firefighters	
Firefighting instructions	: Use water spray to cool unopened containers.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.

SECH	JN 6: Accidental release meas	sures
6.1.	Personal precautions, protective eq	uipment and emergency procedures
General n	neasures	: Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

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6.1.1. Fo	non-emergency	personnel		
No additional	information availal	ble		
6.1.2. Fo	emergency resp	onders		
Protective eq	uipment	:	Avoid breathing Avoid breathing dust,	mist or spray.
6.2. En	vironmental preca	utions		
Prevent furth	er leakage or spilla	ge if safe to do so.	Do not let product enter drains.	
6.3. Me	thods and materia	al for containment	t and cleaning up	
For containm	ent	:	Contain spilled liquid with sand or earl	th. DO NOT use combustible materials such as sawdust.
6.4. Re	erence to other s	ections		
No additional	information availal	ble		
SECTION	7: Handling ar	nd storage		
	cautions for safe			
Additional ha	zards when proces	sed :	: Handle empty containers with care because residual vapours are flammable.	
Precautions f	for safe handling : No naked lights. No smoking. Use only non-sparking tools.		y non-sparking tools.	
Hygiene mea	sures	:	: Wash hands before eating and wash before reuse.	
7.2. Co	nditions for safe s	storage, including	any incompatibilities	
Technical me	asures	:		l static electricity should be followed. Ground/bond se explosion-proof electrical equipment.
Storage cond	itions	:	Store at room temperature away from	light and moisture.
Incompatible	materials	:	Heat sources.	
7.3. Sp	ecific end use(s)			
No additional	information availal	ble		
SECTION	8: Exposure c	ontrols/persor	nal protection	
	ntrol parameters			
2,2'-DIFLU	DROBIPHENYL U	NLABELED 5.0 M	G/ML IN ACETONE (388-82-9)	
Italy - Portu	gal - USA ACGIH	ACGIH TWA (pp	m)	500.0000000000 ppm Eye & Upper Respiratory irritation,Central Nervous System impairment.

Italy - Portugal - USA ACGIH	ACGIH STEL (ppm)	750.0000000000 ppm Eye & Upper Respiratory irritation, Central Nervous System impairment.
ACETONE UNLABELED (67-	64-1)	
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	500 ppm Eye & Upper Respiratory irritation,Central Nervous System impairment.
Italy - Portugal - USA ACGIH	ACGIH STEL (mg/m³)	Eye & Upper Respiratory irritation,Central Nervous System impairment.
Italy - Portugal - USA ACGIH	ACGIH STEL (ppm)	750 ppm
USA OSHA	OSHA PEL (TWA) (ppm)	750 ppm The acetone STEL does not apply to the cellulose acetate fiber industry.
USA OSHA	OSHA PEL (STEL) (ppm)	100 ppm The acetone STEL does not apply to the cellulose acetate fiber industry.

8.2. Exposure controls

Personal protective equipment

: Gloves. Safety glasses. Protective clothing. Respiratory protection of the dependent type.



- : Wear suitable protective clothing and gloves.
- : Wear safety glasses with side shields (or goggles) and a face shield.
- : Wear suitable protective clothing, gloves and eye/face protection.
- : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended.

Hand protection

Skin and body protection

Respiratory protection

Other information

Eye protection

[:] Do not breathe Do not breathe {0|message=<specify applicable conditions>|default=dust/fume/gas/mist/vapours/spray|filter=(_)?INHAL_CONDITION_.+}. Do no eat, drink or smoke when using this product.

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according to Regulation (EC) No. 453/2010 and according	ing to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
SECTION 9: Physical and chemical	properties
9.1. Information on basic physical and	chemical properties
The properties listed below are for the solvent, the main compo	onent of this mixture.
Physical state	: Liquid
Appearance	: Liquid, clear.
Molecular mass	: 58.08 g/mol
Colour	: Colourless.
Odour	: No data available
Odour threshold	: No data available
рН	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: -94 °C (-137 °F)
Freezing point	: No data available
Boiling point	: 56 °C (133 °F) at 1,013 hPa (760 mmHg)
Flash point	: -17.0 °C (1.4 °F) - closed cup
Self ignition temperature	: 465 °C (869 °F)
Decomposition temperature	: No data available
Flammability (solid, gas)	: Highly flammable liquid and vapour
Vapour pressure	: 533.3 hPa at 39.5 °C (103.1 °F)
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Water: Completely miscible
Log Pow	: -0.24
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 2 - 13 % (V)
9.2. Other information	
No additional information available	
SECTION 10: Stability and reactivit	v
10.1. Reactivity	
Vapors may form explosive mixture with air.	
10.2. Chemical stability	
Stable if stored under recommended conditions	
	·····
10.3. Possibility of hazardous reactions	
No additional information available	
10.4. Conditions to avoid	
Open flame. Direct sunlight.	
10.5. Incompatible materials	
Bases, Oxidizing agents, Reducing agents. Re	acts violently with phosphorous oxychloride.
10.6. Hazardous decomposition product	IS
May release flammable gases.	
SECTION 11: Toxicological informa	tion
11.1. Information on toxicological effect	
Acute toxicity	: Not classified

2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 MG/ML IN ACETONE (388-82-9)	
LD50 oral rat	5800 mg/kg
LC50 inhalation rat (mg/l)	50100 mg/m³ 8 h
ATE (oral)	5800.000 mg/kg bodyweight
ATE (vapours)	50.100 mg/l/4h
ATE (dust,mist)	50.100 mg/l/4h

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2,2'-DIFLUOROBIPHENYL UNLABELED 5.0	G/ML IN ACETONE (388-82-9)
LD50 Dermal Guinea Pig	7,426 mg/kg
ACETONE UNLABELED (67-64-1)	
LD50 oral rat	5800 mg/kg
LC50 inhalation rat (mg/l)	50100 mg/m³ 8 h
ATE (oral)	5800.000 mg/kg bodyweight
ATE (vapours)	50.100 mg/l/4h
ATE (dust,mist)	50.100 mg/l/4h
Skin corrosion/irritation	Not classified
	skin - rabbit - Mild skin irritation - 24 h
Serious eye damage/irritation	Causes serious eye irritation.
	Eyes - rabbit - Eye irritation - 24 h
Respiratory or skin sensitisation	Chronic exposure may cause dermatitus.
	No data available
Germ cell mutagenicity	Not available.
Carcinogenicity	This product is or contains a component that is not classifiable as to its carcinogenicity on its IARC, ACGIH, NTP, or EPA classification.
Reproductive toxicity	Not available.
Specific target organ toxicity (single exposure)	May cause drowsiness or dizziness.
	May cause damage to organs.
Specific target organ toxicity (repeated	Not classified
exposure)	No data available
Aspiration hazard	Not classified
Symptoms/injuries after inhalation	Harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness.
Symptoms/injuries after skin contact	Harmful if absorbed through skin. Prolonged or repeated contact can result in drying of the ski which may result in skin irritation.
Symptoms/injuries after eye contact	Causes eye irritation.
Symptoms/injuries after ingestion	Harmful if swallowed.

SECTION 12: Ecological information	
12.1. Toxicity	
2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 M	IG/ML IN ACETONE (388-82-9)
LC50 fishes 1	5540.00 mg/l Oncorhynchus mykiss (rainbow trout) - 96 h
EC50 Daphnia 1	13500.00 mg/l Daphnia magna (Water flea) - 48 h
ACETONE UNLABELED (67-64-1)	
LC50 fishes 1	5540 mg/l Oncorhynchus mykiss (rainbow trout) -96h
EC50 Daphnia 1	13500 mg/l Daphnia magna (Water flea) - 48h

Persistence and degradability 12.2.

Not available.		
2.3. Bioaccumulative potential		
IG/ML IN ACETONE (388-82-9)		
-0.24		
Not available.		
ACETONE UNLABELED (67-64-1)		
-0.24		
12.4. Mobility in soil		
2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 MG/ML IN ACETONE (388-82-9)		
Not available.		
12.5. Results of PBT and vPvB assessment		

No additional information available

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12.6. Other adverse effects	Mar and Table
Other adverse effects	: Not available.
SECTION 13: Disposal consideratio	ns
13.1. Waste treatment methods	
Regional legislation (waste)	: Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations.
Waste disposal recommendations	: Dispose of contents/container to
Additional information	: Handle empty containers with care because residual vapours are flammable.
SECTION 14: Transport information	
In accordance with ADR / RID / ADNR / IMDG /	ICAO / IATA
14.1. UN number	
UN-No.(DOT)	: 1090
DOT NA no.	UN1090
14.2. UN proper shipping name	
DOT Proper Shipping Name	: Acetone
Department of Transportation (DOT) Hazard Classes	: 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT)	: 3 - Flammable liquid
Packing group (DOT)	: II - Medium Danger
DOT Special Provisions (49 CFR 172.102)	 IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized. T4 - 2.65 178.274(d)(2) Normal
	following: Degree of filling = $97 / (1 + a (tr - tf))$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 150
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 202
DOT Packaging Bulk (49 CFR 173.xxx)	: 242
14.3. Additional information	
Other information	: No supplementary information available.
Overland transport	
Packing group (ADR)	: 11
Class (ADR)	: 3 - Flammable liquids
Hazard identification number (Kemler No.)	: 33
Classification code (ADR)	: F1
Danger labels (ADR)	: 3 - Flammable liquids
Orange plates	33 1090
Tunnel restriction code	: D/E
Limited quantities (ADR)	1L
EAC code	: •2YE
Excepted quantities (ADR)	: E2

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Transport by sea

DOT Vessel Stowage Location	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
MFAG-No	: 127
Air transport	
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
Civil Aeronautics Law	: Flammable liquids(Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)
14.4. Environmental hazards	

Other in	ormation : No supplementary information available.		
14.5. Special precautions for user			
14.6.	14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code		
Natapplicable			

Not	applicable	
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SECTION 15: Regulatory information		
15.1. US Federal regulations		
2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 MG/ML IN ACETONE (388-82-9)		
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard	
ACETONE UNLABELED (67-64-1)		
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Fire hazard Delayed (chronic) health hazard	

15.2. International regulations

CANADA

2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 MG/ML IN ACETONE (388-82-9)

Listed on the Canadian DSL (Domestic Sustances List) inventory.

15.2.1. National regulations

No additional information available

15.3. US State regulations 2,2'-DIFLUOROBIPHENYL UNLABELED 5.0 MG/ML IN ACETONE(388-82-9) State or local regulations U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

ACETONE UNLABELED (67-64-1)

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

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:

SECTION 16: Other information

Other information

This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of R-, H- and EUH-phrases::

iox of rt, rr and Eori philasos			
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2		
Flam. Liq. 2	Flammable liquids, Category 2		
Skin Irrit. 2	Skin corrosion/irritation, Category 2		
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis		
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation		
H225	Highly flammable liquid and vapour		
H315	Causes skin irritation		
H319	Causes serious eye irritation		
H335	May cause respiratory irritation		
H336	May cause drowsiness or dizziness		
R11	Highly flammable		
R36	Irritating to eyes		
R66	Repeated exposure may cause skin dryness or cracking		
R67	Vapours may cause drowsiness and dizziness		
R68	Possible risk of irreversible effects		
F	Highly flammable		
Xi	Irritant		

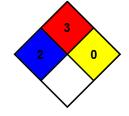
NFPA health hazard

NFPA fire hazard

NFPA reactivity

	medical attention is given.
:	$\ensuremath{3}$ - Liquids and solids that can be ignited under almost all ambient conditions.
:	0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt



HMIS III Rating	
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Health

Physical

:	2 Moderate Hazard -	Temporary or	r minor injury m	ay occur

- : 3 Serious Hazard
- : 0 Minimal Hazard

CIL Mixture SDS

Flammability

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product