

October 6, 2011

Petroleum Branch - Virden
Innovation, Energy and Mines
Box 1359 – 227 King Street
Virden, MB
R0M 2C0
1-800-223-5215

Attention: Allan Gervin / Jennifer Abel

RE: Virden Roselea Unit #3 Tracer Study

Dear Sir / Madam:

This letter is to advise you that Enerplus Corporation will be conducting a Fluorobenzoic Acid Water Tracer study in the Virden Roselea Unit #3 field as per the proposal from IFE (Institute for Energy Technology) dated June 2011.

IFE will be using non-radioactive, low risk Fluorobenzoic Acids as tracers in our 6 water injector locations. The injection of the Fluorobenzoic Acids allows for the 6 injectors to be uniquely traced and analyzed. The information / data will be used to model our waterflood field for an enhanced overall understanding.

The project will commence November 21, 2011.

If you have any questions or concerns, please contact myself.

Thank you.

Sincerely,



Roy Karaypudi
Senior Reservoir Engineer
Canadian Operations

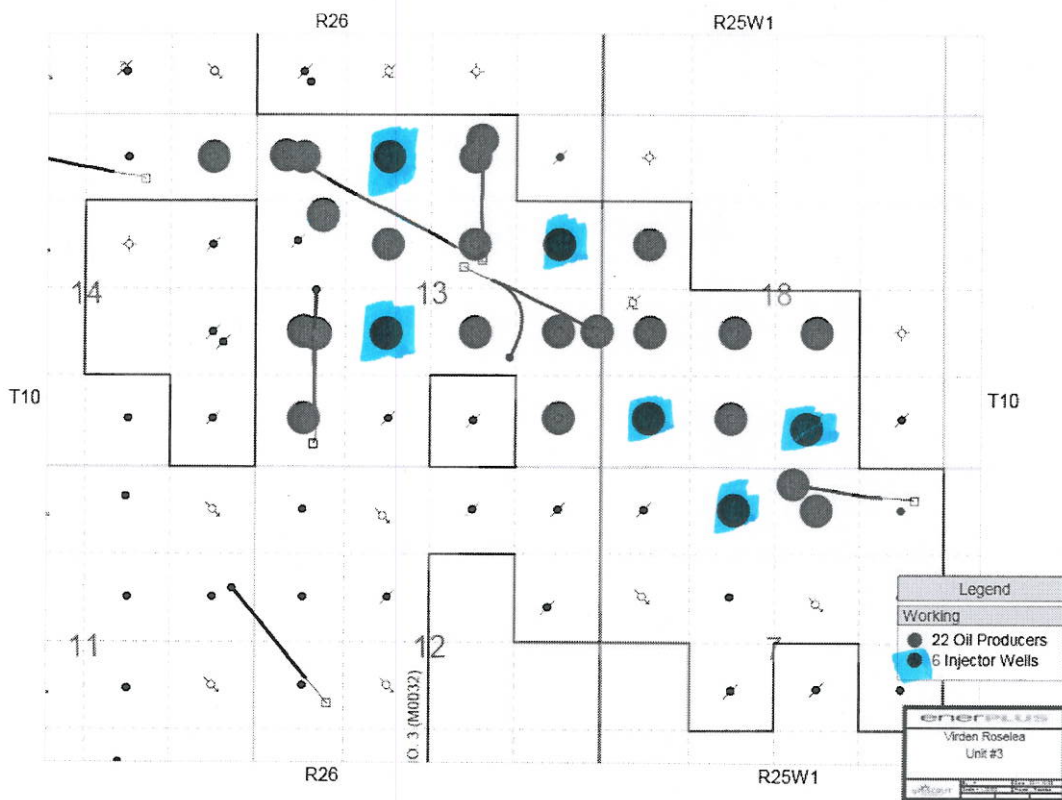
Enerplus

The Dome Tower, Suite 3000, 333-7th Avenue SW
Calgary, AB T2P 2Z1
T. 403-298-1785
www.enerplus.com

ENERPLUS CORPORATION
The Dome Tower, Suite 3000
333 - 7th Avenue SW
Calgary, Alberta T2P 2Z1

T. 403-298-2200 F. 403-298-2211
www.enerplus.com

**Enclosed: Virden Roselea Unit #3 Project Map
MSDS (Material Safety Data Sheets) (6)**



SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

TRADE NAME

4-Fluorobenzoic acid

TYPE OF USE

Tracer at water injection

National manufacturer/importer

Enterprise

Institutt for energiteknikk, IFE

Address

P.B. 40, Instituttveien 18

Postal code

N-2027 Kjeller

Country

Norway

Telephone

(+47) 63 80 60 00

Fax

(+47) 63 81 63 56

Name

Sven Kristian Hartvig

E-mail

firmapost@ifc.no

Tel. (work)

(+47) 63 80 60
00

Country

Norway

Emergency Phone

(+44) 08 45 46 47

Type of assistance

NHS Direct

Opening Hours

Available 24 hours

2. HAZARDS IDENTIFICATION



Irritating

HEALTH

Irritating to eyes and skin.

FIRE AND EXPLOSION

Not combustible.

ENVIRONMENT

Major discharge may have a negative effect in a water environment due to local pH increase.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

3. COMPOSITION / INFORMATION ON INGREDIENTS

No	Ingredient name	Reg.No	EC No.	CAS No.	Conc. (wt%)	Classification
1	4-fluorobenzoic acid		207-259-0	456-22-4	1 - 15 %	Xi,R36/37/38
2	caustic soda, sodium hydroxide		215-185-5	1310-73-2	1 - 5 %	C,R35
3	water		231-791-2	7732-18-5	60 - 100 %	No classification required

Explanation of symbols: T+=highly toxic, T=toxic, C=corrosive, Xn=harmful, Xi=irritant E=Explosive, O=Oxidising, F+=Extremely flammable, F=Highly flammable, N=Dangerous for the environment, Cancer=Carcinogenic, Mut=Mutagenic, Rep=Toxic for reproduction, Conc.=Concentration

INGREDIENT COMMENTS

NaOH will neutralize the acid. Only small amounts NaOH remains after neutralization.

The complete text of the R-phrases mentioned in section 3 is stated in section 16.

4. FIRST AID MEASURES

GENERAL

Immediately move the patient from the source of exposure. Move to fresh air, keep the patient warm and at rest. If the patient is unconscious, but breathing, maintain open airways and place in stable position on one side. Give artificial respiration if breathing has stopped.

INHALATION

See "General". Seek medical attention if any signs of unconsciousness or discomfort develop.

SKIN CONTACT

Rinse with water. Remove contaminated clothing, watches etc. Continue to flush for at least 10 minutes. Get medical advice if discomfort develops.

EYE CONTACT

Flush immediately with a soft jet of lukewarm water, also under the eyelids. Remove any contact lenses. Continue to rinse for at least 15 minutes. Seek medical advice if irritation persists.

INGESTION

Do not induce vomiting. Thoroughly rinse the mouth with water. Give 1-2 glasses of water or preferably milk. Never give anything by mouth to an unconscious person. Seek medical advice.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

CO₂, foam, dry chemical.

EXTINGUISHING METHODS

Remove containers from fire area if this can be done without risk. Fight fire from a well-protected position.

FIRE AND EXPLOSION HAZARDS

Not combustible.

Fire or high temperatures may cause formation of: Oxides of carbon (CO_x). Fluorides.

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Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

General: Evacuate all personnel, use protective equipment for fire-fighting. Use self-contained breathing apparatus when the product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes. Use personal protective equipment.

SAFETY ACTIONS TO PROTECT EXTERNAL ENVIRONMENT

Prevent discharges into the sewage system, watercourses or lakes.

METHODS FOR CLEANING UP

Stop leak if possible without risk. Absorb in an inert material (sand, vermiculite, etc.) and collect into a suitable container. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Dispose of in accordance with local regulations for waste handling (see section 13).

7. HANDLING AND STORAGE

HANDLING ADVICE

Provide good ventilation. Avoid spilling, skin and eye contact. Use personal protective equipment as specified in section 8.

STORAGE

Store tightly closed in a dry, cool and well-ventilated place. Keep in original container. Store separately from oxidising materials. Strong acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE CONTROL

Provide good ventilation. Remove contaminated clothing, watches etc. Wash the skin at the end of each work shift and before eating, smoking and using restroom facilities. Emergency shower and eyewash facilities must be available at the workplace.

RESPIRATORY PROTECTION

Respiratory protective equipment is usually not necessary. In case of insufficient ventilation, wear respiratory protective equipment with A/P2 filter.

EYE PROTECTION

Use tight-fitting protective goggles.

HAND PROTECTION

Protective gloves (chloroprene rubber, PVC). Breakthrough time not determined as preparation. Change gloves often!

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

PROTECTIVE CLOTHING

Wear long-armed protective clothing for protection against possible skin contact.

OEL value

Ingredient name	Cas nr.	Interval	ppm	mg/m3	Year	Notification
caustic soda, sodium hydroxide	1310-73-2	15 min.		2,0	2005	

RECOMMENDED MONITORING PROCEDURES

When evaluating exposure, consider suitable method for sampling, and evaluate if stationary or mobile sampling is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.
Colour	Weak yellowish. Colourless.
Odour	Characteristic.
Water solubility	Water soluble.

Physical and chemical parameters

Parameter	Value/unit	Method/reference	Observation
pH in solution	10 - 11,5		
Melting point	~ 0 °C		
Boiling point	> 100 °C		
Density	~ 1 g/cm ³		

10. STABILITY AND REACTIVITY

STABILITY

Product is stable under normal storage conditions and normal use.

MATERIALS TO AVOID

Avoid contact with oxidizing agents. Strong acids.

11. TOXICOLOGICAL INFORMATION

INHALATION

Gas/vapour may irritate the airways/lungs.

SKIN CONTACT

Irritating to skin. May cause redness and itching.

EYE CONTACT

Irritating to eyes. May cause redness, smarting and itching.

INGESTION

May cause irritation in the mouth and throat, stomach ache, nausea, vomiting and diarrhoea.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

12. ECOLOGICAL INFORMATION ☐

MOBILITY

Dissolves in water.

DEGRADABILITY

Not readily biodegradable.

ACCUMULATION

Not expected to bioaccumulate.

OTHER EFFECTS

Major discharge may have a negative effect in a water environment due to local pH increase.

CONCLUSION

Not readily biodegradable.

Not expected to bioaccumulate.

Prevent discharges into the sewage system, watercourses or lakes.

13. DISPOSAL CONSIDERATIONS ☐

GENERAL REGULATIONS

Treat as hazardous waste. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Removal of package: Containers must be emptied and removed according to local regulations, or reused without removing the label.

CATEGORY OF WASTE

The EWC code is a suggestion only; the end user will select a suitable EWC code. 07 01 99 wastes not otherwise specified

14. TRANSPORT INFORMATION ☐

Classified as Dangerous Goods:

☐

Yes

☒

No

☐

Not assessed

OTHER INFORMATION

Not considered as dangerous goods under ADR, RID, IMDG and IATA.

15. REGULATORY INFORMATION ☐



Irritating

EC-Label

☒

No

☐

Yes

☐

Not assessed

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

COMPOSITION

4-fluorobenzoic acid (1 - 15 %), caustic soda, sodium hydroxide (1 - 5 %), water (60 - 100 %)

R-PHRASES

Nr.

R-Phrase text

R36/38

Irritating to eyes and skin.

S-PHRASES

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

REFERENCES

Directive 1999/45/EC.

Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

European Waste Catalogue (EWC 2002).

Transport of dangerous goods: ADR, RID, IMDG and IATA.

Occupational exposure limits (EH40/2005)

16. OTHER INFORMATION

INFORMATION SOURCES

Composition from producer.

VENDOR NOTES

This safety data sheet has been quality assured by Chemtox according to English rules. Chemtox has established a quality assurance system in accordance with ISO 9001:2000.

Revised by: Kristine Drange

Chemtox is not responsible for any errors or omissions in information provided by the importer/supplier.

LIST OF RELEVANT R-PHRASES

Nr.

R-Phrase text

R35

Causes severe burns.

R36/37/38

Irritating to eyes, respiratory system and skin.

ISSUED:

08/12/1998

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 27/12/2006

4-Fluorobenzoic acid

REVISION HISTORY

Version	Rev. date	Responsible	Changes
1.0.0	08/12/1998	Novatech	Preparation
2.0.0	21/10/2003	Ingrid Helland	Revision
3.0.0	27/12/2006	Kristin L. Dragsund	Revision, regulation
4.0.0	16/09/2008	Kristine Drange	Revision, regulation (REACH, 2. ATP)

SDS is prepared by

Enterprise
Postal code
Country
E-mail
Internet
Telephone
Fax

Chemtox Norge AS
4313 Sandnes
Norway
post@chemtox.com
<http://www.chemtox.com>
+47 51 57 40 00
+47 51 57 40 01

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Replaces date: 28/02/2006

IFE-WT-10

Internal No:

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

TRADE NAME IFE-WT-10
APPLICATION AREA Tracer at water injection

National manufacturer/importer

Enterprise
Address
Postal code
Country
Telephone
Fax
Institutt for energiteknikk, IFE
P.B. 40, Instituttveien 18
N-2027 Kjeller
Norway
(+47) 63 80 60 00
(+47) 63 81 63 56

Name Sven Kristian Hartvig
E-mail firmapost@ifc.no
Tel. (work) (+47) 63 80 60 00
Country Norway

Emergency Phone (+44) 08 45 46 47
Type of assistance NHS Direct
Opening Hours Available 24 hours

2. HAZARDS IDENTIFICATION

HEALTH

Irritating to eyes and skin.

FIRE AND EXPLOSION

Not combustible.

ENVIRONMENT

Not regarded as dangerous for the environment.



Irritating

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-10

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

General: Evacuate all personnel, use protective equipment for fire-fighting. Use self-contained breathing apparatus when the product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES



PERSONAL PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes. Use personal protective equipment.

SAFETY ACTIONS TO PROTECT EXTERNAL ENVIRONMENT

Prevent discharges into the sewage system, watercourses or lakes.

METHODS FOR CLEANING UP

Stop leak if possible without risk. Absorb in an inert material (sand, vermiculite, etc.) and collect into a suitable container. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Dispose of in accordance with local regulations for waste handling (see section 13).

7. HANDLING AND STORAGE



HANDLING ADVICE

Provide good ventilation. Avoid spilling, skin and eye contact. Use personal protective equipment as specified in section 8.

STORAGE

Store tightly closed in a dry, cool and well-ventilated place. Store away from oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION



EXPOSURE CONTROL

Provide good ventilation. Remove contaminated clothing, watches etc. Wash the skin at the end of each work shift and before eating, smoking and using restroom facilities. Emergency shower and eyewash facilities must be available at the workplace.

RESPIRATORY PROTECTION

Respiratory protective equipment is usually not necessary. In case of insufficient ventilation, wear respiratory protective equipment with A/P2 filter.

EYE PROTECTION

Use tight-fitting protective goggles.

HAND PROTECTION

Protective gloves (chloroprene rubber, PVC). Breakthrough time not determined as preparation. Change gloves often!

Physical State Liquid.
Colour Weak yellowish.
Odour Characteristic.
Water solubility Water soluble.

Physical and chemical parameters

Parameter	Value/unit	Method/reference	Observation
pH concentrate	12		
Melting point	~ -2 °C		
Boiling point	~ 103 °C		
Density	~ 1 g/cm³		

10. STABILITY AND REACTIVITY ☐

STABILITY

Product is stable under normal storage conditions and normal use.

MATERIALS TO AVOID

Avoid contact with oxidizing agents.

11. TOXICOLOGICAL INFORMATION ☐

INHALATION

Gas/vapour may irritate the airways/lungs.

SKIN CONTACT

Irritating to skin. May cause redness and itching.

EYE CONTACT

Irritating to eyes. May cause redness, smarting and itching.

INGESTION

May cause irritation in the mouth and throat, stomach ache, nausea, vomiting and diarrhoea.

12. ECOLOGICAL INFORMATION ☐

MOBILITY

Dissolves in water.

DEGRADABILITY

Contains components that dissociate.

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-10

ACCUMULATION

Not expected to bioaccumulate.

OTHER EFFECTS

Discharge into water recipients may lower the pH, which may involve the risk of damage to aquatic organisms.

CONCLUSION

Contains components that dissociate.

Not expected to bioaccumulate.

Avoid larger discharges into waterways and lakes.

13. DISPOSAL CONSIDERATIONS

GENERAL REGULATIONS

Treat as hazardous waste. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Containers should be emptied and removed according to local regulations, or reused without removing the label.

CATEGORY OF WASTE

The EWC code is a suggestion only; the end user will select a suitable EWC code. 07 02 03* organic halogenated solvents, washing liquids and mother liquors

14. TRANSPORT INFORMATION

Classified as Dangerous Goods:

☐

Yes

☒

No

☐

Not assessed

OTHER INFORMATION

Not considered as dangerous goods under ADR, RID, IMDG and IATA.

15. REGULATORY INFORMATION

EC-Label

☒

No

☐

Yes

☐

Not assessed



Irritating

REFERENCES

Directive 1999/45/EC.
Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances.
Directive 2001/58/EC (91/155/EEC).
European Waste Catalogue (2002).
Transport of dangerous goods: ADR, RID, IMDG and IATA.
Occupational exposure limits (EH40/2005)

16. OTHER INFORMATION



INFORMATION SOURCES

SDS from supplier.

VENDOR NOTES

This safety data sheet has been quality assured by Bureau Veritas Norway AS according to English rules. Bureau Veritas Norway AS has established a quality assurance system in accordance with ISO 9001:2000.

Revised by: Gjermund Valand

Bureau Veritas Norway AS is not responsible for any errors or omissions in information provided by the importer/supplier.

LIST OF RELEVANT R-PHRASES

Nr. R-Phrase text
R35 Causes severe burns.
R36/38 Irritating to eyes and skin.

ISSUED: 28/02/2006

REVISION HISTORY

Version	Rev. date	Responsible	Changes
1.0.0	28/02/2006	Anja Birkeland	Preparation
2.0.0	04/02/2010	Gjermund Valand	Revision, regulations

SDS is prepared by

Enterprise Bureau Veritas Norway AS
Address Stokkanyrveien 20
Postal code 4313 Sandnes
Country Norway
E-mail post.svg@no.bureauveritas.com
Internet http://www.bureauveritas.no
Telephone +47 51 57 40 00
Fax +47 51 57 40 01

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-9

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING ☐

TRADE NAME IFE-WT-9
APPLICATION AREA Tracer at water injection

National manufacturer/importer

Enterprise Institutt for energiteknikk, IFE
Address P.B. 40, Instituttveien 18
Postal code N-2027 Kjeller
Country Norway
Telephone (+47) 63 80 60 00
Fax (+47) 63 81 63 56

Name	E-mail	Tel. (work)	Country
Sven Kristian Hartvig	firmapost@ife.no	(+47) 63 80 60 00	Norway

Emergency Phone	Type of assistance	Opening Hours
(+44) 08 45 46 47	NHS Direct	Available 24 hours

2. HAZARDS IDENTIFICATION ☐



Irritating

HEALTH

Irritating to eyes and skin.

FIRE AND EXPLOSION

Not combustible.

ENVIRONMENT

Not regarded as dangerous for the environment.

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-9

3. COMPOSITION / INFORMATION ON INGREDIENTS ☐

No	Ingredient name	Reg.No	EC No.	CAS No.	Conc. (wt%)	Classification
1	caustic soda, sodium hydroxide		215-185-5	1310-73-2	0 - 1 %	C,R35
2	water		231-791-2	7732-18-5	60 - 100 %	No classification required
3	aromatic acid		-	confidential	10 - 30 %	Xi,R36/37/38

Explanation of symbols: T+=highly toxic, T=toxic, C=corrosive, Xn=harmful, Xi=irritant E=Explosive, O=Oxidising, F+=Extremely flammable, F=Highly flammable, N=Dangerous for the environment, Cancer=Carcinogenic, Mut=Mutagenic, Rep=Toxic for reproduction, Conc.=Concentration

INGREDIENT COMMENTS

Bureau Veritas Norway AS has received confidential information on the composition of the product. This information has been evaluated when completing the datasheet.

The complete text of the R-phrases mentioned in section 3 is stated in section 16.

4. FIRST AID MEASURES ☐

GENERAL

Immediately move the patient from the source of exposure. Move to fresh air, keep the patient warm and at rest. If the patient is unconscious, but breathing, maintain open airways and place in stable position on one side. Give artificial respiration if breathing has stopped.

INHALATION

See "General". Seek medical attention if any signs of unconsciousness or discomfort develop.

SKIN CONTACT

Rinse with water. Remove contaminated clothing, watches etc. Continue to flush for at least 10 minutes. Get medical advice if discomfort develops.

EYE CONTACT

Flush immediately with a soft jet of lukewarm water, also under the eyelids. Remove any contact lenses. Continue to rinse for at least 15 minutes. Seek medical advice if irritation persists.

INGESTION

Do not induce vomiting. Thoroughly rinse the mouth with water. Give 1-2 glasses of water or preferably milk. Never give anything by mouth to an unconscious person. Seek medical advice.

5. FIRE-FIGHTING MEASURES ☐

EXTINGUISHING MEDIA

CO₂, foam, dry chemical.

EXTINGUISHING METHODS

Remove containers from fire area if this can be done without risk. Fight fire from a well-protected position.

FIRE AND EXPLOSION HAZARDS

Not combustible. In a fire carbonmonoxide (CO) and carbondioxide (CO₂) may be formed. Fluorides.

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-9

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

General: Evacuate all personnel, use protective equipment for fire-fighting. Use self-contained breathing apparatus when the product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes. Use personal protective equipment.

SAFETY ACTIONS TO PROTECT EXTERNAL ENVIRONMENT

Prevent discharges into the sewage system, watercourses or lakes.

METHODS FOR CLEANING UP

Stop leak if possible without risk. Absorb in an inert material (sand, vermiculite, etc.) and collect into a suitable container. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Dispose of in accordance with local regulations for waste handling (see section 13).

7. HANDLING AND STORAGE

HANDLING ADVICE

Provide good ventilation. Avoid spilling, skin and eye contact. Use personal protective equipment as specified in section 8.

STORAGE

Store tightly closed in a dry, cool and well-ventilated place. Store away from oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE CONTROL

Provide good ventilation. Remove contaminated clothing, watches etc. Wash the skin at the end of each work shift and before eating, smoking and using restroom facilities. Emergency shower and eyewash facilities must be available at the workplace.

RESPIRATORY PROTECTION

Respiratory protective equipment is usually not necessary. In case of insufficient ventilation, wear respiratory protective equipment with A/P2 filter.

EYE PROTECTION

Use tight-fitting protective goggles.

HAND PROTECTION

Protective gloves (chloroprene rubber, PVC). Breakthrough time not determined as preparation. Change gloves often!

PROTECTIVE CLOTHING

Wear long-armed protective clothing for protection against possible skin contact.

OEL value

Ingredient name	CAS no.	Range	ppm	mg/m3	Year	Notification
caustic soda, sodium hydroxide	1310-73-2	15 min.		2,0	2005	

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-9

RECOMMENDED MONITORING PROCEDURES

When evaluating exposure, consider suitable method for sampling, and evaluate if stationary or mobile sampling is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES ☐

Physical State Liquid.
Colour Weak yellowish.
Odour Characteristic.
Water solubility Water soluble.

Physical and chemical parameters

Parameter	Value/unit	Method/reference	Observation
pH concentrate	12		
Melting point	~ -2 °C		
Boiling point	~ 103 °C		
Density	~ 1 g/cm ³		

10. STABILITY AND REACTIVITY ☐

STABILITY

Product is stable under normal storage conditions and normal use.

MATERIALS TO AVOID

Avoid contact with oxidizing agents.

11. TOXICOLOGICAL INFORMATION ☐

INHALATION

Gas/vapour may irritate the airways/lungs.

SKIN CONTACT

Irritating to skin. May cause redness and itching.

EYE CONTACT

Irritating to eyes. May cause redness, smarting and itching.

INGESTION

May cause irritation in the mouth and throat, stomach ache, nausea, vomiting and diarrhoea.

12. ECOLOGICAL INFORMATION ☐

MOBILITY

Dissolves in water.

DEGRADABILITY

Contains components that dissociate.

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-9

ACCUMULATION

Not expected to bioaccumulate.

OTHER EFFECTS

Discharge into water recipients may lower the pH, which may involve the risk of damage to aquatic organisms.

CONCLUSION

Contains components that dissociate.

Not expected to bioaccumulate.

Avoid larger discharges into waterways and lakes.

13. DISPOSAL CONSIDERATIONS

GENERAL REGULATIONS

Treat as hazardous waste. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Containers should be emptied and removed according to local regulations, or reused without removing the label.

CATEGORY OF WASTE

The EWC code is a suggestion only; the end user will select a suitable EWC code. 07 02 03* organic halogenated solvents, washing liquids and mother liquors

14. TRANSPORT INFORMATION

Classified as Dangerous Goods:

☐

Yes

☒

No

☐

Not assessed

OTHER INFORMATION

Not considered as dangerous goods under ADR, RID, IMDG and IATA.

15. REGULATORY INFORMATION



Irritating

EC-Label

☒

No

☐

Yes

☐

Not assessed

COMPOSITION

caustic soda, sodium hydroxide (0 - 1 %), water (60 - 100 %), aromatic acid (10 - 30 %)

R-PHRASES

Nr.

R-Phrase text

R36/38

Irritating to eyes and skin.

SAFETY DATA SHEET

SAFETY DATA SHEET

Last changed: 04/02/2010

Internal No:

Replaces date: 28/02/2006

IFE-WT-9

S-PHRASES

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S37/39 Wear suitable gloves and eye/face protection.

REFERENCES

Directive 1999/45/EC.

Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances.

Directive 2001/58/EC (91/155/EEC).

European Waste Catalogue (2002).

Transport of dangerous goods: ADR, RID, IMDG and IATA.

Occupational exposure limits (EH40/2005)

16. OTHER INFORMATION

INFORMATION SOURCES

Composition from supplier.

VENDOR NOTES

This safety data sheet has been quality assured by Bureau Veritas Norway AS according to English rules. Bureau Veritas Norway AS has established a quality assurance system in accordance with ISO 9001:2000.

Revised by: Gjermund Valand

Bureau Veritas Norway AS is not responsible for any errors or omissions in information provided by the importer/supplier.

LIST OF RELEVANT R-PHRASES

Nr.	R-Phrase text
R35	Causes severe burns.
R36/37/38	Irritating to eyes, respiratory system and skin.

ISSUED: 28/02/2006

REVISION HISTORY

Version	Rev. date	Responsible	Changes
1.0.0	28/02/2006	Anja Birkeland	Preparation
2.0.0	04/02/2010	Gjermund Valand	Revision, regulations

SDS is prepared by

Enterprise	Bureau Veritas Norway AS
Address	Stokkamyrveien 20
Postal code	4313 Sandnes
Country	Norway
E-mail	post.svg@no.bureauveritas.com
Internet	http://www.bureauveritas.no
Telephone	+47 51 57 40 00
Fax	+47 51 57 40 01

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING ☐

TRADE NAME 2,4,5- Trifluorobenzoic acid
TYPE OF USE Tracer at water injection

National manufacturer/importer

Enterprise Institutt for energiteknikk, IFE
Address P.B. 40, Instituttveien 18
Postal code N-2027 Kjeller
Country Norway
Telephone (+47) 63 80 60 00
Fax (+47) 63 81 63 56

Name	E-mail	Tel. (work)	Country
Sven Kristian Hartvig	firmapost@ife.no	(+47) 63 80 60 00	Norway

Emergency Phone	Type of assistance	Opening Hours
(+44) 08 45 46 47	NHS Direct	Available 24 hours

2. HAZARDS IDENTIFICATION ☐



Irritating

HEALTH

Irritating to eyes and skin.

FIRE AND EXPLOSION

Not combustible.

ENVIRONMENT

Major discharge may have a negative effect in a water environment due to local pH increase.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

3. COMPOSITION / INFORMATION ON INGREDIENTS

No	Ingredient name	Reg.No	EC No.	CAS No.	Conc. (wt%)	Classification
1	2,4,5-trifluorobenzoic acid			446-17-3	1 - 15 %	Xi,R36/37/38
2	caustic soda, sodium hydroxide		215-185-5	1310-73-2	1 - 5 %	C,R35
3	water		231-791-2	7732-18-5	60 - 100 %	No classification required

Explanation of symbols: T+=highly toxic, T=toxic, C=corrosive, Xn=harmful, Xi=irritant E=Explosive, O=Oxidising, F+=Extremely flammable, F=Highly flammable, N=Dangerous for the environment, Cancer=Carcinogenic, Mut=Mutagenic, Rep=Toxic for reproduction, Conc.=Concentration

INGREDIENT COMMENTS

NaOH will neutralize the acid. Only small amounts NaOH remains after neutralization.

The complete text of the R-phrases mentioned in section 3 is stated in section 16.

4. FIRST AID MEASURES

GENERAL

Immediately move the patient from the source of exposure. Move to fresh air, keep the patient warm and at rest. If the patient is unconscious, but breathing, maintain open airways and place in stable position on one side. Give artificial respiration if breathing has stopped.

INHALATION

See "General". Seek medical attention if any signs of unconsciousness or discomfort develop.

SKIN CONTACT

Rinse with water. Remove contaminated clothing, watches etc. Continue to flush for at least 10 minutes. Get medical advice if discomfort develops.

EYE CONTACT

Flush immediately with a soft jet of lukewarm water, also under the eyelids. Remove any contact lenses. Continue to rinse for at least 15 minutes. Seek medical advice if irritation persists.

INGESTION

Do not induce vomiting. Thoroughly rinse the mouth with water. Give 1-2 glasses of water or preferably milk. Never give anything by mouth to an unconscious person. Seek medical advice.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

CO₂, foam, dry chemical.

EXTINGUISHING METHODS

Remove containers from fire area if this can be done without risk. Fight fire from a well-protected position.

FIRE AND EXPLOSION HAZARDS

Not combustible.

Fire or high temperatures may cause formation of: Oxides of carbon (COx). Fluorides.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

General: Evacuate all personnel, use protective equipment for fire-fighting. Use self-contained breathing apparatus when the product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES ☐

PERSONAL PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes. Use personal protective equipment.

SAFETY ACTIONS TO PROTECT EXTERNAL ENVIRONMENT

Prevent discharges into the sewage system, watercourses or lakes.

METHODS FOR CLEANING UP

Stop leak if possible without risk. Absorb in an inert material (sand, vermiculite, etc.) and collect into a suitable container. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Dispose of in accordance with local regulations for waste handling (see section 13).

7. HANDLING AND STORAGE ☐

HANDLING ADVICE

Provide good ventilation. Avoid spilling, skin and eye contact. Use personal protective equipment as specified in section 8.

STORAGE

Store tightly closed in a dry, cool and well-ventilated place. Keep in original container. Store separately from oxidising materials. Strong acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION ☐

EXPOSURE CONTROL

Provide good ventilation. Remove contaminated clothing, watches etc. Wash the skin at the end of each work shift and before eating, smoking and using restroom facilities. Emergency shower and eyewash facilities must be available at the workplace.

RESPIRATORY PROTECTION

Respiratory protective equipment is usually not necessary. In case of insufficient ventilation, wear respiratory protective equipment with A/P2 filter.

EYE PROTECTION

Use tight-fitting protective goggles.

HAND PROTECTION

Protective gloves (chloroprene rubber, PVC). Breakthrough time not determined as preparation. Change gloves often!

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

PROTECTIVE CLOTHING

Wear long-armed protective clothing for protection against possible skin contact.

OEL value

Ingredient name	Cas nr.	Interval	ppm	mg/m3	Year	Notification
caustic soda, sodium hydroxide	1310-73-2	15 min.		2,0	2005	

RECOMMENDED MONITORING PROCEDURES

When evaluating exposure, consider suitable method for sampling, and evaluate if stationary or mobile sampling is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.
Colour	Weak yellowish. Colourless.
Odour	Characteristic.
Water solubility	Water soluble.

Physical and chemical parameters

Parameter	Value/unit	Method/reference	Observation
pH in solution	10 - 11,5		
Melting point	~ 0 °C		
Boiling point	> 100 °C		
Density	~ 1 g/cm ³		

10. STABILITY AND REACTIVITY

STABILITY

Stable under recommended storage and handling conditions.

MATERIALS TO AVOID

Avoid contact with oxidizing agents. Strong acids.

11. TOXICOLOGICAL INFORMATION

INHALATION

Gas/vapour may irritate the airways/lungs.

SKIN CONTACT

Irritating to skin. May cause redness and itching.

EYE CONTACT

Irritating to eyes. May cause redness, smarting and itching.

INGESTION

May cause irritation in the mouth and throat, stomach ache, nausea, vomiting and diarrhoea.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

12. ECOLOGICAL INFORMATION ☐

MOBILITY

Dissolves in water.

DEGRADABILITY

Not readily biodegradable.

ACCUMULATION

Not expected to bioaccumulate.

OTHER EFFECTS

Major discharge may have a negative effect in a water environment due to local pH increase.

CONCLUSION

Not readily biodegradable.

Not expected to bioaccumulate.

Prevent discharge to the sewage system, waterways or lakes.

13. DISPOSAL CONSIDERATIONS ☐

GENERAL REGULATIONS

Treat as hazardous waste. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Removal of package: Containers must be emptied and removed according to local regulations, or reused without removing the label.

CATEGORY OF WASTE

The EWC code is a suggestion only; the end user will select a suitable EWC code. 07 01 99 wastes not otherwise specified

14. TRANSPORT INFORMATION ☐

Classified as Dangerous Goods: ☐ Yes ☒ No ☐ Not assessed

OTHER INFORMATION

Not considered as dangerous goods under ADR, RID, IMDG and IATA.

15. REGULATORY INFORMATION ☐



Irritating

EC-Label ☒ No ☐ Yes ☐ Not assessed

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

COMPOSITION

2,4,5-trifluorobenzoic acid (1 - 15 %), caustic soda, sodium hydroxide (1 - 5 %), water (60 - 100 %)

R-PHRASES

Nr.

R-Phrase text

R36/38

Irritating to eyes and skin.

S-PHRASES

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

REFERENCES

Directive 1999/45/EC.

Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

European Waste Catalogue (EWC 2002).

Transport of dangerous goods: ADR, RID, IMDG and IATA.

Occupational exposure limits (EH40/2005)

16. OTHER INFORMATION

INFORMATION SOURCES

Composition from producer.

VENDOR NOTES

This safety data sheet has been quality assured by Chemtox according to English rules. Chemtox has established a quality assurance system in accordance with ISO 9001:2000.

Revised by: Kristine Drange

Chemtox is not responsible for any errors or omissions in information provided by the importer/supplier.

LIST OF RELEVANT R-PHRASES

Nr.

R-Phrase text

R35

Causes severe burns.

R36/37/38

Irritating to eyes, respiratory system and skin.

ISSUED:

08/12/1998

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 15/09/2008

Internal No:

Replaces date: 02/01/2007

2,4,5- Trifluorobenzoic acid

REVISION HISTORY

Version	Rev. date	Responsible	Changes
1.0.0	08/12/1998	Novatech	Preparation
2.0.0	22/10/2003	Ingrid Helland	Revision, regulation
3.0.0	02/01/2007	Kristin L. Dragsund	Revision, regulation
4.0.0	15/09/2008	Kristine Drange	Revision, regulation (REACH, 2. ATP)

SDS is prepared by

Enterprise
Postal code
Country
E-mail
Internet
Telephone
Fax

Chemtox Norge AS
4313 Sandnes
Norway
post@chemtox.com
<http://www.chemtox.com>
+47 51 57 40 00
+47 51 57 40 01

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING ☐

TRADE NAME 2,6-Difluorobenzoic acid
TYPE OF USE Tracer at water injection

National manufacturer/importer

Enterprise Institutt for energiteknikk, IFE
Address P.B. 40, Instituttveien 18
Postal code N-2027 Kjeller
Country Norway
Telephone (+47) 63 80 60 00
Fax (+47) 63 81 63 56

Name
Sven Kristian Hartvig

E-mail
firmapost@ifc.no

Tel. (work) **Country**
(+47) 63 80 60 00 Norway

Emergency Phone
(+44) 08 45 46 47

Type of assistance
NHS Direct

Opening Hours
Available 24 hours

2. HAZARDS IDENTIFICATION ☐



Irritating

HEALTH

Irritating to eyes and skin.

FIRE AND EXPLOSION

Not combustible.

ENVIRONMENT

Major discharge may have a negative effect in a water environment due to local pH increase.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

3. COMPOSITION / INFORMATION ON INGREDIENTS ☐

No	Ingredient name	Reg.No	EC No.	CAS No.	Conc. (wt%)	Classification
1	2,6-difluorobenzoic acid		206-856-3	385-00-2	1 - 15 %	Xi,R36/37/38
2	caustic soda, sodium hydroxide		215-185-5	1310-73-2	1 - 5 %	C,R35
3	water		231-791-2	7732-18-5	60 - 100 %	No classification required

Explanation of symbols: T+=highly toxic, T=toxic, C=corrosive, Xn=harmful, Xi=irritant E=Explosive, O=Oxidising, F+=Extremely flammable, F=Highly flammable, N=Dangerous for the environment, Cancer=Carcinogenic, Mut=Mutagenic, Rep=Toxic for reproduction, Conc.=Concentration

INGREDIENT COMMENTS

NaOH will neutralize the acid. Only small amounts NaOH remains after neutralization.

The complete text of the R-phrases mentioned in section 3 is stated in section 16.

4. FIRST AID MEASURES ☐

GENERAL

Immediately move the patient from the source of exposure. Move to fresh air, keep the patient warm and at rest. If the patient is unconscious, but breathing, maintain open airways and place in stable position on one side. Give artificial respiration if breathing has stopped.

INHALATION

See "General". Seek medical attention if any signs of unconsciousness or discomfort develop.

SKIN CONTACT

Rinse with water. Remove contaminated clothing, watches etc. Continue to flush for at least 10 minutes. Get medical advice if discomfort develops.

EYE CONTACT

Flush immediately with a soft jet of lukewarm water, also under the eyelids. Remove any contact lenses. Continue to rinse for at least 15 minutes. Seek medical advice if irritation persists.

INGESTION

Do not induce vomiting. Thoroughly rinse the mouth with water. Give 1-2 glasses of water or preferably milk. Never give anything by mouth to an unconscious person. Seek medical advice.

5. FIRE-FIGHTING MEASURES ☐

EXTINGUISHING MEDIA

CO₂, foam, dry chemical.

EXTINGUISHING METHODS

Remove containers from fire area if this can be done without risk. Fight fire from a well-protected position.

FIRE AND EXPLOSION HAZARDS

Not combustible.

Fire or high temperatures may cause formation of: Oxides of carbon (CO_x). Fluorides.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

General: Evacuate all personnel, use protective equipment for fire-fighting. Use self-contained breathing apparatus when the product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes. Use personal protective equipment.

SAFETY ACTIONS TO PROTECT EXTERNAL ENVIRONMENT

Prevent discharges into the sewage system, watercourses or lakes.

METHODS FOR CLEANING UP

Stop leak if possible without risk. Absorb in an inert material (sand, vermiculite, etc.) and collect into a suitable container. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Dispose of in accordance with local regulations for waste handling (see section 13).

7. HANDLING AND STORAGE

HANDLING ADVICE

Provide good ventilation. Avoid spilling, skin and eye contact. Use personal protective equipment.

STORAGE

Store tightly closed in a dry, cool and well-ventilated place. Keep in original container. Store separately from oxidising materials. Strong acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE CONTROL

Provide good ventilation. Remove contaminated clothing, watches etc. Wash the skin at the end of each work shift and before eating, smoking and using restroom facilities. Emergency shower and eyewash facilities must be available at the workplace.

RESPIRATORY PROTECTION

Respiratory protective equipment is usually not necessary. In case of insufficient ventilation, wear respiratory protective equipment with A/P2 filter.

EYE PROTECTION

Use tight-fitting protective goggles.

HAND PROTECTION

Protective gloves (chloroprene rubber, PVC). Breakthrough time not determined as preparation. Change gloves often!

PROTECTIVE CLOTHING

Wear long-armed protective clothing for protection against possible skin contact.

OEL value

Ingredient name	Cas nr.	Interval	ppm	mg/m3	Year	Notification
caustic soda, sodium hydroxide	1310-73-2	15 min.		2,0	2005	

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

RECOMMENDED MONITORING PROCEDURES

When evaluating exposure, consider suitable method for sampling, and evaluate if stationary or mobile sampling is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.
Colour	Weak yellowish. Colourless.
Odour	Characteristic.
Water solubility	Water soluble.

Physical and chemical parameters

Parameter	Value/unit	Method/reference	Observation
pH in solution	10 - 11,5		
Melting point	~ 0 °C		
Boiling point	> 100 °C		
Density	~ 1 g/cm ³		

10. STABILITY AND REACTIVITY

STABILITY

Product is stable under normal storage conditions and normal use.

MATERIALS TO AVOID

Avoid contact with oxidizing agents. Strong acids.

11. TOXICOLOGICAL INFORMATION

INHALATION

Gas/vapour may irritate the airways/lungs.

SKIN CONTACT

Irritating to skin. May cause redness and itching.

EYE CONTACT

Irritating to eyes. May cause redness, smarting and itching.

INGESTION

May cause irritation in the mouth and throat, stomach ache, nausea, vomiting and diarrhoea.

12. ECOLOGICAL INFORMATION

MOBILITY

Dissolves in water.

DEGRADABILITY

Not readily biodegradable.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

ACCUMULATION

Not expected to bioaccumulate.

OTHER EFFECTS

Major discharge may have a negative effect in a water environment due to local pH increase.

CONCLUSION

Not readily biodegradable.

Not expected to bioaccumulate.

Prevent discharges into the sewage system, watercourses or lakes.

13. DISPOSAL CONSIDERATIONS

GENERAL REGULATIONS

Treat as hazardous waste. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Removal of package: Containers must be emptied and removed according to local regulations, or reused without removing the label.

CATEGORY OF WASTE

The EWC code is a suggestion only; the end user will select a suitable EWC code. 07 01 99 wastes not otherwise specified

14. TRANSPORT INFORMATION

Classified as Dangerous Goods:

☐

Yes

☒

No

☐

Not assessed

OTHER INFORMATION

Not considered as dangerous goods under ADR, RID, IMDG and IATA.

15. REGULATORY INFORMATION



Irritating

EC-Label

☒

No

☐

Yes

☐

Not assessed

COMPOSITION

2,6-difluorobenzoic acid (1 - 15 %), caustic soda, sodium hydroxide (1 - 5 %), water (60 - 100 %)

R-PHRASES

Nr.

R36/38

R-Phrase text

Irritating to eyes and skin.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

S-PHRASES

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

REFERENCES

Directive 1999/45/EC.

Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

European Waste Catalogue (EWC 2002).

Transport of dangerous goods: ADR, RID, IMDG and IATA.

Occupational exposure limits (EH40/2005)

16. OTHER INFORMATION

INFORMATION SOURCES

Compostion from producer.

VENDOR NOTES

This safety data sheet has been quality assured by Chemtox according to English rules. Chemtox has established a quality assurance system in accordance with ISO 9001:2000.

Revised by: Kristine Drange

Chemtox is not responsible for any errors or omissions in information provided by the importer/supplier.

LIST OF RELEVANT R-PHRASES

Nr.	R-Phrase text
R35	Causes severe burns.
R36/37/38	Irritating to eyes, respiratory system and skin.

ISSUED: 08/12/1998

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2,6-Difluorobenzoic acid

REVISION HISTORY

Version	Rev. date	Responsible	Changes
1.0.0	08/12/1998	Novatech	Preparation
2.0.0	22/10/2003	Ingrid Helland	Reision, regulation
3.0.0	02/01/2007	Kristin L. Dragsund	Revision, regulation
4.0.0	16/09/2008	Kristine Drange	Revision, regulation (REACH, 2. ATP)

SDS is prepared by

Enterprise
Postal code
Country
E-mail
Internet
Telephone
Fax

Chemtox Norge AS
4313 Sandnes
Norway
post@chemtox.com
<http://www.chemtox.com>
+47 51 57 40 00
+47 51 57 40 01

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2-Fluorobenzoic acid

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING ☐

TRADE NAME 2-Fluorobenzoic acid
TYPE OF USE Tracer at water injection

National manufacturer/importer

Enterprise Institutt for energiteknikk, IFE
Address P.B. 40, Instituttveien 18
Postal code N-2027 Kjeller
Country Norway
Telephone (+47) 63 80 60 00
Fax (+47) 63 81 63 56

Name
Sven Kristian Hartvig

E-mail
firmapost@ife.no

Tel. (work)
(+47) 63 80 60
00

Country
Norway

Emergency Phone
(+44) 08 45 46 47

Type of assistance
NHS Direct

Opening Hours
Available 24 hours

2. HAZARDS IDENTIFICATION ☐



Irritating

HEALTH

Irritating to eyes and skin.

FIRE AND EXPLOSION

Not combustible.

ENVIRONMENT

Major discharge may have a negative effect in a water environment due to local pH increase.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2-Fluorobenzoic acid

3. COMPOSITION / INFORMATION ON INGREDIENTS

No	Ingredient name	Reg.No	EC No.	CAS No.	Conc. (wt%)	Classification
1	2-fluorobenzoic acid		207-158-1	445-29-4	1 - 15 %	Xi,R36/37/38
2	caustic soda, sodium hydroxide		215-185-5	1310-73-2	1 - 5 %	C,R35
3	water		231-791-2	7732-18-5	60 - 100 %	No classification required

Explanation of symbols: T+=highly toxic, T=toxic, C=corrosive, Xn=harmful, Xi=irritant E=Explosive, O=Oxidising, F+=Extremely flammable, F=Highly flammable, N=Dangerous for the environment, Cancer=Carcinogenic, Mut=Mutagenic, Rep=Toxic for reproduction, Conc.=Concentration

INGREDIENT COMMENTS

NaOH will neutralize the acid. Only small amounts NaOH remains after neutralization.

The complete text of the R-phrases mentioned in section 3 is stated in section 16.

4. FIRST AID MEASURES

GENERAL

Immediately move the patient from the source of exposure. Move to fresh air, keep the patient warm and at rest. If the patient is unconscious, but breathing, maintain open airways and place in stable position on one side. Give artificial respiration if breathing has stopped.

INHALATION

See "General". Seek medical attention if any signs of unconsciousness or discomfort develop.

SKIN CONTACT

Rinse with water. Remove contaminated clothing, watches etc. Continue to flush for at least 10 minutes. Get medical advice if discomfort develops.

EYE CONTACT

Flush immediately with a soft jet of lukewarm water, also under the eyelids. Remove any contact lenses. Continue to rinse for at least 15 minutes. Seek medical advice if irritation persists.

INGESTION

Do not induce vomiting. Thoroughly rinse the mouth with water. Give 1-2 glasses of water or preferably milk. Never give anything by mouth to an unconscious person. Seek medical advice.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

CO₂, foam, dry chemical.

EXTINGUISHING METHODS

Remove containers from fire area if this can be done without risk. Fight fire from a well-protected position.

FIRE AND EXPLOSION HAZARDS

Not combustible.

Fire or high temperatures may cause formation of: Oxides of carbon (CO_x). Fluorides.

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2-Fluorobenzoic acid

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

General: Evacuate all personnel, use protective equipment for fire-fighting. Use self-contained breathing apparatus when the product is involved in fire.

6. ACCIDENTAL RELEASE MEASURES



PERSONAL PRECAUTIONS

Provide good ventilation. Avoid contact with skin and eyes. Use personal protective equipment.

SAFETY ACTIONS TO PROTECT EXTERNAL ENVIRONMENT

Prevent discharges into the sewage system, watercourses or lakes.

METHODS FOR CLEANING UP

Stop leak if possible without risk. Absorb in an inert material (sand, vermiculite, etc.) and collect into a suitable container. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Dispose of in accordance with local regulations for waste handling (see section 13).

7. HANDLING AND STORAGE



HANDLING ADVICE

Provide good ventilation. Avoid spilling, skin and eye contact. Use personal protective equipment as specified in section 8.

STORAGE

Store tightly closed in a dry, cool and well-ventilated place. Keep in original container. Store separately from oxidising materials. Strong acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION



EXPOSURE CONTROL

Provide good ventilation. Remove contaminated clothing, watches etc. Wash the skin at the end of each work shift and before eating, smoking and using restroom facilities. Emergency shower and eyewash facilities must be available at the workplace.

RESPIRATORY PROTECTION

Respiratory protective equipment is usually not necessary. In case of insufficient ventilation, wear respiratory protective equipment with A/P2 filter.

EYE PROTECTION

Use tight-fitting protective goggles.

HAND PROTECTION

Protective gloves (chloroprene rubber, PVC). Breakthrough time not determined as preparation. Change gloves often!

SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

Last changed: 16/09/2008

Internal No:

Replaces date: 02/01/2007

2-Fluorobenzoic acid

PROTECTIVE CLOTHING

Wear long-armed protective clothing for protection against possible skin contact.

OEL value

Ingredient name	Cas nr.	Interval	ppm	mg/m3	Year	Notification
caustic soda, sodium hydroxide	1310-73-2	15 min.		2,0	2005	

RECOMMENDED MONITORING PROCEDURES

When evaluating exposure, consider suitable method for sampling, and evaluate if stationary or mobile sampling is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid.
Colour	Weak yellowish. Colourless.
Odour	Characteristic.
Water solubility	Water soluble.

Physical and chemical parameters

Parameter	Value/unit	Method/reference	Observation
pH in solution	10 - 11,5		
Melting point	~ 0 °C		
Boiling point	> 100 °C		
Density	~ 1 g/cm ³		

10. STABILITY AND REACTIVITY

STABILITY

Product is stable under normal storage conditions and normal use.

MATERIALS TO AVOID

Avoid contact with oxidizing agents. Strong acids.

11. TOXICOLOGICAL INFORMATION

INHALATION

Gas/vapour may irritate the airways/lungs.

SKIN CONTACT

Irritating to skin. May cause redness and itching.

EYE CONTACT

Irritating to eyes. May cause redness, smarting and itching.

INGESTION

May cause irritation in the mouth and throat, stomach ache, nausea, vomiting and diarrhoea.

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12. ECOLOGICAL INFORMATION ☐

MOBILITY

Dissolves in water.

DEGRADABILITY

Not readily biodegradable.

ACCUMULATION

Not expected to bioaccumulate.

OTHER EFFECTS

Major discharge may have a negative effect in a water environment due to local pH increase.

CONCLUSION

Not readily biodegradable.

Not expected to bioaccumulate.

Prevent discharges into the sewage system, watercourses or lakes.

13. DISPOSAL CONSIDERATIONS ☐

GENERAL REGULATIONS

Treat as hazardous waste. Collect and dispose of materials in closed and labelled containers at an approved disposal or waste collection facility. Removal of package: Containers must be emptied and removed according to local regulations, or reused without removing the label.

CATEGORY OF WASTE

The EWC code is a suggestion only; the end user will select a suitable EWC code. 07 01 99 wastes not otherwise specified

14. TRANSPORT INFORMATION ☐

Classified as Dangerous Goods:

☐

Yes

☒

No

☐

Not assessed

OTHER INFORMATION

Not considered as dangerous goods under ADR, RID, IMDG and IATA.

15. REGULATORY INFORMATION ☐



Irritating

EC-Label

☒

No

☐

Yes

☐

Not assessed

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COMPOSITION

2-fluorobenzoic acid (1 - 15 %), caustic soda, sodium hydroxide (1 - 5 %), water (60 - 100 %)

R-PHRASES

Nr.

R-Phrase text

R36/38

Irritating to eyes and skin.

S-PHRASES

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

REFERENCES

Directive 1999/45/EC.

Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

European Waste Catalogue (EWC 2002).

Transport of dangerous goods: ADR, RID, IMDG and IATA.

Occupational exposure limits (EH40/2005)

16. OTHER INFORMATION

INFORMATION SOURCES

Compition from producer.

VENDOR NOTES

This safety data sheet has been quality assured by Chemtox according to English rules. Chemtox has established a quality assurance system in accordance with ISO 9001:2000.

Revised by: Kristine Drange

Chemtox is not responsible for any errors or omissions in information provided by the importer/supplier.

LIST OF RELEVANT R-PHRASES

Nr.

R-Phrase text

R35

Causes severe burns.

R36/37/38

Irritating to eyes, respiratory system and skin.

ISSUED:

08/12/1998

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REVISION HISTORY

Version	Rev. date	Responsible	Changes
1.0.0	08/12/1998	Novatech	Preparation
2.0.0	22/10/2003	Ingrid Helland	Revision, regulation
3.0.0	02/01/2007	Kristin L. Dragsund	Revision, regulation
4.0.0	16/09/2008	Kristine Drange	Revision, regulation (REACH, 2. ATP)

SDS is prepared by

Enterprise
Postal code
Country
E-mail
Internet
Telephone
Fax

Chemtox Norge AS
4313 Sandnes
Norway
post@chemtox.com
<http://www.chemtox.com>
+47 51 57 40 00
+47 51 57 40 01

