SOLVAY ANIMAL HEALTH, INC.
MATERIAL SAFETY DATA SHEET

Corporate Offices:
Solvay Animal Health, Inc.
1201 Northland Drive
Mendota Heights, MN 55120-1139
Emergency Phone No: (612) 681-9555

Plant Site:
Solvay Animal Health, Inc.
2000 Rockford Road
Charles City, IA 50616
Emergency Phone Nos.:
Days: (515) 257-2422
Nights: (515) 257-3486 or 3487

Issue Date: **March 15, 1993**

SECTION 1 NAME & PRODUCT

Chemical Name, Trade Name & Synonyms:

IsoFlo™

isoflurane, USP
1-Chloro-2,2,2-trifluoroethyl Difluoromethyl Ether

Formula of Primary Component(s):

$CF_3CHClOCHF_2$ M.W. 184.5

Use: Inhalation anaesthetic

SECTION 2 INGREDIENTS

	%	PEL/TLV (units)
isoflurane [CAS 26675-46-2]	100	Not Listed

SECTION 3 PHYSICAL DATA

Melting Point:	Not Applicable
Boiling Point @ 760 mmHg:	48.5°C
Vapor pressure @ 25°C:	330 mmHg
Vapor density (Air=1):	6.4
Solubility in water:	Insoluble
Specific gravity (25°C):	1.45
Viscosity:	Not determined
Odor:	Slight, ether like
Appearance:	Clear, colorless liquid

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point (and method): Not determined

Flammable Limits STP: Lower Not Determined Upper

Extinguishing media:
Product is not considered flammable.
Use appropriate medium to extinguish underlying cause of fire which could result in the combustion and thermal decomposition of the product.

Fire fighting protective equipment/procedure:
Where thermal decomposition of the product is likely, wear full protective clothing and a positive-pressure self contained breathing apparatus.
Evacuate area of unprotected persons.

Provided as a "Value Added Service" by The Butler Company

ire & explosion hazards:
Thermal decomposition of this product could result in a release of vapors containing Cl^- and F^-. Inhalation of such vapors is to be considered as toxic and corrosive and is to be avoided. Such exposure is always considered to be potentially serious.

NFPA Hazard Code - HEALTH / FLAMMABILITY / REACTIVITY / OTHER: 3 / 1 / 0 -
NFPA rating assigned to this product by Solvay Animal Health, Inc. is based upon the estimated hazard potential of this material under fire conditions.

SECTION 5 REACTIVITY DATA

Stability (conditions to avoid):
Stable under normal storage and handling conditions.

Incompatibility (materials to avoid):
Avoid strong chemical oxidizing and reducing agents.

Hazardous decomposition products:
Thermal decomposition can result in a release of vapors containing Cl^- and F^-, which are to be considered as toxic and corrosive.

Hazardous polymerization:
Will not occur under normal storage and handling conditions.

ECTION 6 HEALTH HAZARD DATA

Eye contact:
Liquid and vapor may cause temporary eye irritation.
A similar compound (enflurane) was moderately irritating to eyes in rabbits.
Avoid contact as a precaution.

Skin contact:
Dermal irritation potential has not been determined.
Dermal sensitization potential has not been determined.
Prolonged skin contact may result in dryness and redness as fats and oils are considered soluble in the product.
Avoid prolonged contact as a precaution.

Skin absorption:
Absorption potential has not been determined.
Avoid prolonged skin contact as a precaution.

Ingestion:
Product is not considered toxic according to oral toxicity criteria established by 29 CFR 1910.1200.
Ingestion is not considered to be a potential route of exposure under normal handling conditions.
Do not ingest.
Laboratory oral toxicity studies have established an LD_{50} (mice, rats) range of 4770-5080 mg/kg.

Inhalation:
Product is not considered toxic according to inhalation toxicity criteria established by 29 CFR 1910.1200.
Prolonged inhalation of the product vapors is to be avoided as a precaution.
Laboratory inhalation toxicity studies have established an LC_{50} (mice, rat) range of 15,300-16,800 ppm/3 hour duration.

Effects of overexposure:
The product is considered an inhalation anesthetic. Inhalation is to be considered the greatest potential route of human exposure. The effects of human overexposure have not been determined for this product. Short term overexposure may cause drowsiness, a continued overexposure may cause unconsciousness.

Clinical use and effects information exist.
Clinically, isoflurane produces anesthesia with a minimum alveolar concentration to produce a surgical plain of anesthesis of 11,500 ppm. A negligible amount of an inspired dose (>0.2%) is metabolized to fluoride-containing metabolites. Under exaggerated conditions, large concentrations of isoflurane have produced injury to the liver and produced maternal effects, fetotoxicity, cleft palate and decreased reproductive performances in animal studies involving inhalation.
In clinical use isoflurane produces anesthesia that can be accompanied by hyperthermia, respiratory depression, hypotension, arrhythmia slurring, vomiting ileus and a decrease in intellectual performance. Subclinical concentrations has produced sedation and a decrease in mental function.

Medical conditions which may be aggravated by overexposure to isoflurane may include, but are not limited to, persons sensitive to hyperthermia, sensitive to isoflurane or other halogenated anesthetics and persons with cardiovascular or respiratory disease.

Carcinogenic Evaluation*:

1)	International Agency for Research on Cancer (IARC):	Not listed
2)	National Toxicology Program (NTP):	Not listed
3)	29 CFR Part 1910.1000 (OSHA):	Not listed
4)	American Conference of Government Industrial Hygienists: (ACGIH)	Not listed

* Evaluation includes product mixture as well as all ingredients greater than or equal to 0.1% by weight of the product mixture.

SARA Title III Evaluation:

Sec. 302 SARA Extremely Hazardous Substance:	Not listed
Sec. 311 OSHA Hazardous Chemical:	Applicable
Sec. 304 CERCLA Hazardous Substance:	Not listed
Sec. 313 SARA Toxic Chemical:	Not listed

SECTION 7 FIRST AID

Eyes:
If eye contact occurs immediately flush with flowing water continuously for a minimum of 15 minutes. Consult with medical personnel in the event an irritation develops.

Skin:
If skin contact occurs, remove contaminated clothing and wash exposed area with soap and water.
Consult with medical personnel in the event an irritation develops.

Ingestion:
Seek medical attention immediately following an accidental ingestion of this product. Provide symptomatic/supportive medical care. Maintain ventilation with pure oxygen as necessary.
No known antidote exists.

Inhalation:
Upon overexposure move person to fresh air.
Seek medical attention immediately should an adverse reaction or signs of toxicity occur. Provide symptomatic/supportive medical care. Maintain ventilation with pure oxygen as necessary.
No known antidote exists.

SECTION 8 HANDLING PRECAUTIONS

Ventilation:
Local ventilation is recommended where vapors could be released into the work environment.

Respiratory protection (specify type):
Not necessary under normal handling conditions where local ventilation is provided.
Should a spill or leak occur refer to 29 CFR 1910.134 "Respiratory Protection" for the selection of the appropriate organic vapor cartridge type, air supplied or self contained breathing apparatus personal respirators.

Skin protection:
Use protective clothing to minimize the possibility of prolonged skin contact. Selection of specific items such as gloves (neoprene), apron or body coveralls will depend upon the usage. Following handling of the product, wash potentially contacted skin areas with soap and water. Launder contaminated clothing prior to reuse.

Eye protection:
Use safety glasses where contact is likely to occur. Safety goggles are recommended.
Wearing of contact lenses is not recommended when handling this product.

SECTION 9 ENVIRONMENTAL AND DISPOSAL INFORMATION

Action to be taken for spills/releases:
Remove all unprotected persons from the affected area.
Utilize the appropriate personal protective equipment listed in Section 8.
Absorb spillage with sawdust or other inert absorbents, i.e. paper/cloth towels. Ensure the affected area is well ventilated and spilled residual removed before allowing non-protected persons to return.

Disposal method:
Empty product container, spilled product and contaminated absorbent material are to be disposed in accordance with all local, state and federal regulations.
These materials, intended for disposal, are not considered as hazardous according to the USEPA Resource Conservation and Recovery Act, 40 CFR Part 261.

SECTION 10 ADDITIONAL INFORMATION

Special precautions to be taken in handling and storage:
Avoid inhalation overexposure.

The information herein is given in good faith but no warranty, expressed or implied, is made.
Contact **Solvay Animal Health, Inc.**, for further information.