SAFETY DATA SHEETS

This SDS packet was issued with item: 078928004

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

078927998 078927999 078928000 078928001 078928002 078928003

The safety data sheets (SDS) in this packet apply to one or more components included in the items listed below. Items listed below may require one or more SDS. Please refer to invoice for specific item number(s).

078928005



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SECTION 1. IDENTIFICATION

Product name	:	Fluralaner / Diethyltoluamide Liquid Formulation
Manufacturer or supplier's c	leta	ails
Company name of supplier	:	Merck & Co., Inc
Address	:	126 E. Lincoln Avenue
		Rahway, New Jersey U.S.A. 07065
Telephone	:	908-740-4000
Emergency telephone	:	1-908-423-6000
E-mail address	:	EHSDATASTEWARD@merck.com
Recommended use of the cl	nen	nical and restrictions on use
Recommended use	:	Veterinary product
Restrictions on use	:	Not applicable

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accor 1910.1200)	dan	ce with the OSHA Hazard Communication Standard (29 CFR
Flammable liquids	:	Category 2
Reproductive toxicity	:	Category 1B
GHS label elements Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H225 Highly flammable liquid and vapor. H360D May damage the unborn child.
Precautionary Statements	:	 Prevention: P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P210 Keep away from heat, sparks, open flame and hot surfaces. No smoking. P233 Keep container tightly closed. P241 Use explosion-proof electrical, ventilating and lighting equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P280 Wear protective gloves, protective clothing, eye protection and face protection.



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Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P308 + P313 IF exposed or concerned: Get medical attention.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.

Disposal:

P501 Dispose of contents and container to an approved waste disposal plant.

Other hazards

Vapors may form explosive mixture with air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Mixture
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Compo	onents
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Chemical name	CAS-No.	Concentration (% w/w)
N,N-Dimethylacetamide	127-19-5	>= 30 - < 50
Fluralaner	864731-61-3	>= 20 - < 30
Poly(oxy-1,2-ethanediyl), α-	31692-85-0	>= 10 - < 20
[(tetrahydro-2-furanyl)methyl]-ω-		
hydroxy-		
N,N-Diethyl-m-toluamide	134-62-3	>= 10 - < 20
Acetone	67-64-1	>= 10 - < 20

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately.
		When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.
If swallowed	:	If swallowed, DO NOT induce vomiting. If vomiting occurs have person lean forward. Call a physician or poison control center immediately. Rinse mouth thoroughly with water.



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	Most ir and eff	nportant symptoms fects, both acute and	:	Never give anyth May damage the	ing by mouth to an unconscious person. unborn child.
	delaye Protec	d tion of first-aiders	:	First Aid respond and use the reco when the potentia	ers should pay attention to self-protection, mmended personal protective equipment al for exposure exists (see section 8).
	Notes	to physician	:	Treat symptomat	ically and supportively.
SEC	CTION 5	5. FIRE-FIGHTING ME	ASL	JRES	
	Suitabl	le extinguishing media	:	Water spray Alcohol-resistant Carbon dioxide ((foam CO2)
	Unsuita	able extinguishing	:	High volume wate	er jet
	Specifi	ic hazards during fire	:	Do not use a soli fire. Flash back possi Vapors may form Exposure to com	d water stream as it may scatter and spread ole over considerable distance. explosive mixtures with air. bustion products may be a hazard to health.
	Hazard ucts	ous combustion prod-	:	Carbon oxides Chlorine compou Fluorine compou Nitrogen oxides (nds nds NOx)
	Specifi ods	ic extinguishing meth-	:	Use extinguishing cumstances and Use water spray Remove undama so.	g measures that are appropriate to local cir- the surrounding environment. to cool unopened containers. ged containers from fire area if it is safe to do
	Specia for fire	Il protective equipment fighters	:	In the event of fir Use personal pro	e, wear self-contained breathing apparatus. tective equipment.
SEC	CTION	6. ACCIDENTAL RELE	EAS	E MEASURES	
	Persor tive eq gency	nal precautions, protec- uipment and emer- procedures	• :	Remove all source Ventilate the area Use personal pro Follow safe hand protective equipm	es of ignition. a. tective equipment. ling advice (see section 7) and personal nent recommendations (see section 8).
	Enviro	nmental precautions	:	Avoid release to Prevent further le Prevent spreadin oil barriers). Retain and dispo	the environment. akage or spillage if safe to do so. g over a wide area (e.g., by containment or se of contaminated wash water.

Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for : Non-sparking tools should be used.



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contair	nment and cleaning up	Soak up with iner Suppress (knock jet. For large spills, p containment to ke can be pumped, s container. Clean up remainin absorbent. Local or national disposal of this m employed in the o determine which Sections 13 and certain local or na	t absorbent material. down) gases/vapors/mists with a water spray rovide diking or other appropriate eep material from spreading. If diked material store recovered material in appropriate ng materials from spill with suitable regulations may apply to releases and naterial, as well as those materials and items cleanup of releases. You will need to regulations are applicable. 15 of this SDS provide information regarding ational requirements.

SECTION 7. HANDLING AND STORAGE

Technical measures	:	See Engineering measures under EXPOSURE
Local/Total ventilation	:	If sufficient ventilation is unavailable, use with local exhaust ventilation. Use explosion-proof electrical, ventilating and lighting equip-
Advice on safe handling	:	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment Non-sparking tools should be used. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment.
Conditions for safe storage	:	Keep in properly labeled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.
Materials to avoid	:	Do not store with the following product types: Strong oxidizing agents Self-reactive substances and mixtures Organic peroxides Flammable solids Pyrophoric liquids Pyrophoric solids Self-heating substances and mixtures Substances and mixtures which in contact with water emit



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flammable gases Explosives Gases Very acutely toxic substances and mixtures

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
N,N-Dimethylacetamide	127-19-5	TWA	10 ppm	ACGIH
		TWA	10 ppm 35 mg/m³	NIOSH REL
		TWA	10 ppm 35 mg/m³	OSHA Z-1
Fluralaner	864731-61-3	TWA	100 µg/m3 (OEB 2)	Internal
	Further inform	ation: Skin		
		Wipe limit	1000 µg/100 cm ²	Internal
Acetone	67-64-1	TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
		TWA	250 ppm 590 mg/m³	NIOSH REL
		TWA	1,000 ppm 2,400 mg/m³	OSHA Z-1

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam- pling time	Permissible concentra- tion	Basis
N,N-Dimethylacetamide	127-19-5	N- Methylaceta mide	Urine	End of shift at end of work- week	30 mg/g Creatinine	ACGIH BEI
Acetone	67-64-1	Acetone	Urine	End of shift (As soon as possible after exposure ceases)	25 mg/l	ACGIH BEI

Engineering measures : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections). All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Laboratory operations do not require special containment.



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_			Use explosion-pr equipment.	oof electrical, ventilating and lighting
Perso	nal protective equipn	nent		
Respir	atory protection	:	General and loca maintain vapor ex concentrations at unknown, approp Follow OSHA res use NIOSH/MSH by air purifying re hazardous chemi supplied respirate release, exposure circumstance wh adequate protect	I exhaust ventilation is recommended to provide the second secon
Hand p	protection			
Mat	erial	:	Chemical-resista	ntgloves
Ren	narks	:	Take note that th	e product is flammable, which may impact
Eyepro	otection	:	Wear safety glas If the work enviro mists or aerosols Wear a faceshiel potential for direct aerosols.	ses with side shields or goggles. nment or activity involves dusty conditions, , wear the appropriate goggles. d or other full face protection if there is a ct contact to the face with dusts, mists, or
Skin ar Hygien	nd body protection ne measures	:	Work uniform or If exposure to che eye flushing syste working place. When using do n Wash contamina The effective ope engineering cont appropriate dego industrial hygiene use of administra	aboratory coat. emical is likely during typical use, provide ems and safety showers close to the ot eat, drink or smoke. ted clothing before re-use. eration of a facility should include review of rols, proper personal protective equipment, wning and decontamination procedures, e monitoring, medical surveillance and the tive controls.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	yellow
Odor	:	No data available
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available



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	lnitial b range	oiling point and boiling	:	217 °F / 103 °C	
	Flash p	point	:	45 °F / 7 °C	
	Evapor	ration rate	:	No data availabl	e
	Flamm	ability (solid, gas)	:	Not applicable	
	Flamm	ability (liquids)	:	Not applicable	
	Upper explosion limit / Upper flammability limit			No data availabl	e
	Lower e flamma	explosion limit / Lower ability limit	:	No data availabl	e
	Vapor	pressure	:	67 hPa (68 °F / 2	0 °C)
	Relativ	e vapor density	:	No data available	e
	Relativ	e density	:	No data availabl	e
	Density	/	:	1.059 g/cm ³	
	Solubil Wat	ity(ies) er solubility	:	No data availabl	e
	Partitio	n coefficient: n-	:	Not applicable	
	octano Autoigr	Vwater nition temperature	:	No data availabl	e
	Decom	position temperature	:	No data availabl	e
	Viscos Visc	ity cosity, kinematic	:	No data availabl	e
	Explos	iveproperties	:	Not explosive	
	Oxidizi	ng properties	:	The substance o	r mixture is not classified as oxidizing.
	Molecu	ılar weight	:	No data availabl	e
	Particle	esize	:	Not applicable	

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reac-	:	Highly flammable liquid and vapor.
tions		Vapors may form explosive mixture with air.



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				Can react with s	rong oxidizing agents.					
Conditions to avoid Incompatible materials Hazardous decomposition products			 Heat, flames and sparks. Oxidizing agents No hazardous decomposition products are known. 							
SECT	SECTION 11. TOXICOLOGICAL INFORMATION									
In S In E	nforma nhalatio Skin co ngestio Sye co	ation on likely route on intact on ntact	s of	exposure						
A N	lot cla	oxicity ssified based on avail	able	information.						
<u>P</u>	roduc	<u>>t:</u>								
A	cute o	oral toxicity	:	LD50 (Rat): > 2,0 Remarks: No mo	00 mg/kg rtality observed at this dose.					
A	cute ir	nhalation toxicity	:	Acute toxicity est Exposure time: 4 Test atmosphere Method: Calculat	imate: 5.95 mg/l h : dust/mist ion method					
A	cute d	ermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Symptoms: Erythema						
<u>C</u>	ompo	onents:								
N	l,N-Dir	nethylacetamide:								
A	cute o	oral toxicity	:	LD50 (Rat): 4,800) mg/kg					
A	cute ir	nhalation toxicity	:	LC50 (Rat): 2.2 m Exposure time: 4 Test atmosphere	ng/l h : dust/mist					
A	cute d	lermal toxicity	:	Acute toxicity est Method: Expert ju Remarks: Based	imate: 1,100 mg/kg udgment on national or regional regulation.					
F	lurala	ner:								
A	cute o	ral toxicity	:	LD50 (Rat): > 2,0 Remarks: No mo No significant adv	00 mg/kg rtality observed at this dose. verse effects were reported					
A	cute d	lermal toxicity	:	LD50 (Rat): > 2,0 Remarks: No sig	00 mg/kg nificant adverse effects were reported					

Poly(oxy-1,2-ethanediyl), α -[(tetrahydro-2-furanyl)methyl]- ω -hydroxy-:

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Acut	Acute oral toxicity		: LD50 (Rat, female): > 2,000 mg/kg Method: OECD Test Guideline 423 Remarks: Based on data from similar mater			
N.N-	Diethvl-m-toluamide:					
Acut	Acute oral toxicity Acute inhalation toxicity Acute dermal toxicity		LD50 (Rat): 1,950	0 mg/kg		
Acut			LC50 (Rat): 5.95 Exposure time: 4 Test atmosphere	mg/l h e: dust/mist		
Acut			LD50 (Rat): 5,000	0 mg/kg		
Acet	one:					
Acut	e oral toxicity	:	LD50 (Rat): 5,800	0 mg/kg		
Acut	Acute inhalation toxicity Acute dermal toxicity Skin corrosion/irritation Not classified based on avai <u>Product:</u> Species Result		LC50 (Rat): 76 mg/l Exposure time: 4 h Test atmosphere: vapor			
Acut			: LD50 (Rabbit): 7,426 mg/kg			
Not o Proc Spec Resu			e information. Rabbit No skin irritation			
<u>Com</u>	iponents:					
N,N- Spec Resu	Dimethylacetamide: cies ult	:	Rabbit No skin irritation			
Flura	alaner:					
Spec Resu	cies Ilt	:	Rabbit No skin irritation			
Poly	r(oxy-1,2-ethanediyl), α	-[(te	etrahydro-2-furany	yl)methyl]-ω-hydroxy-:		
Spec	cies	:	reconstructed hu	ıman epidermis (RhE)		
Rem	arks	:	Based on data fr	om similar materials		
Resu	ılt	:	No skin irritation			
N.N-	Diethyl-m-toluamide:					
Spec	cies	:	Rabbit			
Resu	ult	:	No skin irritation			
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Ace	etone:							
Ass	Assessment		Repeated expos	ure may cause skin dryness or cracking.				
Se i Not	r ious eye damage/eye i t classified based on ava	i rritat ailable	ion e information.					
Pro	Product:							
Spe Res	ecies sult	:	Rabbit Mild eye irritatior	ı				
Co	mponents:							
N,N	I-Dimethylacetamide:							
Spe Res	ecies sult	:	Rabbit Irritation to eyes,	reversing within 21 days				
Flu	iralaner:							
Spe Res	ecies sult	:	Rabbit Mild eye irritatior	1				
Po	Poly(oxy-1,2-ethanediyl), o		etrahydro-2-furan	yl)methyl]-ω-hydroxy-:				
Spe	ecies	:	Tissue Culture					
Rer	nod narks	:	Based on data fr	rom similar materials				
Spe	ecies	:	Bovine cornea					
Met Rer	thod narks	:	OECD Test Guid Based on data fr	leline 437 om similar materials				
Res	sult	:	Irritation to eyes,	reversing within 21 days				
N,N	I-Diethyl-m-toluamide:							
Spe		:	Rabbit	reversing within 01 days				
Res	narks	:	Based on nation	al or regional regulation.				
Ace	etone:							
Spe	ecies	:	Rabbit	reversing within 01 days				
Kes	thod	:	OECD Test Guic	reversing within 21 days Ieline 405				
_								

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.



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Resp Not c	iratory sensitization lassified based on ava	ilable inform	tion.				
Produ Test T Route Speci Resul	uct: Type es of exposure t	: Maxin : Derma : Guine : Not a	 Maximization Test Dermal Guinea pig Not a skin sensitizer. 				
<u>Com</u>	Components:						
N,N-E Route Speci Resul	Dimethylacetamide: es of exposure es t	: Skin c : Guine : negat	ontact a pig ve				
Flura Test T Route Speci Resul	Fluralaner: Test Type Routes of exposure Species Result		ization Test I a pig skin sensitizer.				
Poly(Test 1 Metho Resul Rema	Poly(oxy-1,2-ethanediyl), c Test Type Method Result Remarks		tetrahydro-2-furanyl)methyl]-ω-hydroxy-: KeratinoSens assay OECD Test Guideline 442D negative Based on data from similar materials				
Test T Metho Resul Rema	⊽pe od t ırks	: Direct : OECD : positiv : Based	Peptide Reactivity Assa Test Guideline 442C e on data from similar m	ay (DPRA) aterials			
Test 1 Metho Resul Rema	īype od t ırks	: Dendr : OECD : negat : Based	tic cell activation test Test Guideline 442E /e on data from similar m	aterials			
Aceto Test T Route Speci Resul	one: Type as of exposure tes t	: Maxin : Skin c : Guine : negat	ization Test ontact a pig /e				

Germ cell mutagenicity

Not classified based on available information.

Components:

N,N-Dimethylacetamide:



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G	enotoxicity in vitro	:	Test Type: Bacte Result: negative	rial reverse mutation assay (AMES)
G	Genotoxicity in vivo		Test Type: Rode Species: Rat Application Route Method: OECD T Result: negative	nt dominant lethal test (germ cell) (in vivo) e: Inhalation Fest Guideline 478
F	luralanor			
G	enotoxicity in vitro	:	Test Type: Bacte Result: negative	rial reverse mutation assay (AMES)
			Test Type: Mous Result: negative	e Lymphoma
			Test Type: Chror Result: negative	nosomal aberration
G	enotoxicity in vivo	:	Test Type: Micro Species: Mouse Cell type: Bone n Application Route Result: negative	nucleus test narrow e: Oral
P	olv(oxy-1 2-ethanediyl) a	.[/to	trahvdro-2-furan	/l)methyl]-(hydroxy
G	enotoxicity in vitro	:	Test Type: Bacte Method: OECD T Result: negative	Figure Aryanoxy : Pest Guideline 471
			Remarks. Daseu	on data nom sinnia materiais
Ν	.N-Diethvl-m-toluamide:			
G	enotoxicity in vitro	:	Test Type: Bacte Result: negative	rial reverse mutation assay (AMES)
Α	cetone:			
G	enotoxicity in vitro	:	Test Type: In vitr Result: negative	o mammalian cell gene mutation test
			Test Type: Bacte Result: negative	rial reverse mutation assay (AMES)
			Test Type: Chror Result: negative	nosome aberration test in vitro
G	enotoxicity in vivo	:	Test Type: Mamr cytogenetic assa Species: Mouse Application Route Result: negative	malian erythrocyte micronucleus test (in vivo y) e: Ingestion



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	Carcinogenicity Not classified based on availa		able	information.		
	<u>Comp</u>	onents	<u>.</u>			
	N,N-D	imethyl	acetamide:			
	Specie	es Intion Do		:	Rat	
	Expos	sure time	e	:	18 month(s))
	Result	I		:	negative	
	Flural	aner:				
	Carcin ment	ogenicit	y - Assess-	:	No data available	9
	N,N-D	iethyl-n	n-toluamide:		_	
	Species		Nute	:	Rat	
	Expos	sure time		:	104 weeks	
	Result		:	negative		
	Aceto	ne:				
	Specie	es		:	Mouse	
	Applic	ation Ro	oute	:	Skin contact	
	Result		,	:	negative	
	IARC		Group 2B: Po	ossi	bly carcinogenic to	humans
			N,N-Dimethy	lace	etamide	127-19-5
	OSHA	L.	No compone on OSHA's li	nt o st o	f this product prese f regulated carcino	ent at levels greater than or equal to 0.1% is gens.
	NTP		No ingredien identified as	t of t a kn	this product preser own or anticipated	nt at levels greater than or equal to 0.1% is carcinogen by NTP.
	Renro	ductive	toxicity			
	May d	amage t	the unborn child	d.		
	<u>Comp</u>	onents	<u>:</u>			
	N,N-D	imethyl	acetamide:			
	Effects	s on ferti	ility	:	Test Type: One-Q	generation reproduction toxicity study
					Application Rout	e: Inhalation
					Result: negative	
	Effects	s on feta	l development	:	Test Type: Embr	yo-fetal development
			·		Species: Rat	. lebeletion
					Result: positive	e: Innaiation
					1	



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Reproductive toxicity - As- sessment		:	Clear evidence of adverse effects on development, based on animal experiments.				
	Flurala	aner:					
	Effects	on fertility	:	Species: Rat Application Route: Oral General Toxicity Parent: NOAEL: 50 mg/kg body weight General Toxicity F1: LOAEL: 100 mg/kg body weight Result: No effects on fertility., Postimplantation loss., Adverse neonatal effects.			
				Test Type: One-g Species: Dog Application Route Fertility: NOAEL: Result: No effects development wer Remarks: No sign	eneration reproduction toxicity study e: Oral 75 mg/kg body weight s on fertility and early embryonic e detected. nificant adverse effects were reported		
	Effects	on fetal development	:	Test Type: Developmental To Species: Rat Application Route Developmental To Result: Embryoto offspring were de No teratogenic ef	opment e: Oral oxicity: NOAEL: 100 mg/kg body weight xic effects and adverse effects on the tected only at high maternally toxic doses, fects.		
				Test Type: Develor Species: Rabbit Application Route Developmental To Result: Skeletal n Remarks: Matern	opment e: Oral oxicity: NOAEL: 10 mg/kg body weight nalformations., Visceral malformations. al toxicity observed.		
				Test Type: Developmental Topological Topol	opment e: Dermal oxicity: NOAEL: 100 mg/kg body weight nalformations.		
	Reproc sessm	luctive toxicity - As- ent	:	Suspected of dan	naging the unborn child.		
	N,N-Di Effects	ethyl-m-toluamide: on fetal development	:	Test Type: Embry Species: Rat Application Route Result: negative	vo-fetal development e: Ingestion		

Acetone:



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	Effects	s on fertility	:	Test Type: One-g Species: Rat Application Route Result: negative	eneration reproduction toxicity study e: Ingestion
	Effects	on fetal development	:	Test Type: Embry Species: Rat Application Route Result: negative	vo-fetal development e: inhalation (vapor)
	STOT- Not cla	single exposure assified based on availa	able	information.	
	<u>Comp</u>	onents:			
	Acetor Assess	ne: sment	:	May cause drows	siness or dizziness.
	STOT- Not cla	repeated exposure assified based on availa	able	information.	
	Repea	ted dose toxicity			
	<u>Comp</u>	onents:			
	N,N-Di	methylacetamide:			
	Specie NOAEI LOAEL Applica Expos	es - ation Route ure time	:	Rat 90 mg/m ³ 360 mg/m ³ inhalation (vapor) 24 Months	
	Flural	aner:			
	Specie NOAEI Applica Expos Target Remar	es L ation Route ure time Organs ks		Dog 1 mg/kg Oral 52 Weeks Liver No significant adv	verse effects were reported
	Specie LOAEL Applica Expos Sympt	es - ation Route ure time oms	:	Juvenile dog 56 - 280 mg/kg Oral 24 Weeks Diarrhea	
	Specie LOAEL Applica Expos Target	es - ation Route ure time Organs	:	Rat 400 mg/kg Oral 90 Days Liver, thymus gla	nd
	Specie	2S	:	Rat	



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NOAEI Applica Expos Target Remar	- ation Route ure time Organs <s< td=""><td>:</td><td>500 mg/kg Dermal 90 Days Liver No significant adv</td><td>verse effects were reported</td></s<>	:	500 mg/kg Dermal 90 Days Liver No significant adv	verse effects were reported
Acetor Specie NOAEI LOAEL Applica Expos	ne: - - ation Route ure time	:	Rat 900 mg/kg 1,700 mg/kg Ingestion 90 Days	
Specie NOAEI Applica Expos	s - ation Route ure time	:	Rat 45 mg/l inhalation (vapor) 8 Weeks	

Aspiration toxicity

Not classified based on available information.

Components:

Fluralaner:

Not applicable

Acetone:

The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

Experience with human exposure

<u>Product:</u> Skin contact Eve contact	:	Remarks: May irritate skin. Remarks: May cause eye irritation.
Components:		
Fluralaner: Skin contact Eye contact	:	Remarks: May irritate skin. Remarks: May cause eye irritation.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

N,N-Dimethylacetamide:

Toxicity to fish

: LC50 (Leuciscus idus (Golden orfe)): > 500 mg/l Exposure time: 96 h



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T	Toxicity aquatic	/ to daphnia and other invertebrates	:	EC50 (Daphnia m Exposure time: 44 Method: Directive	nagna (Water flea)): > 500 mg/l 3 h e 67/548/EEC, Annex V, C.2.
Т р	Toxicity plants	/ to algae/aquatic	:	EC50 (Desmodes Exposure time: 72	smus subspicatus (green algae)): > 500 mg/l 2 h
				EC10 (Desmodes Exposure time: 72	smus subspicatus (green algae)): > 500 mg/l 2 h
Т	Toxicity	/ to microorganisms	:	EC10: > 1,995 mg Exposure time: 30	g/l) min
F	Flurala	iner:			
Т	Toxicity	/ to fish	:	LC50 (Oncorhynd Exposure time: 90 Method: OECD T Remarks: No toxi	thus mykiss (rainbow trout)): > 0.0488 mg/l 6 h est Guideline 203 city at the limit of solubility.
T a	Toxicity aquatic	/ to daphnia and other invertebrates	:	EC50 (Daphnia m Exposure time: 44 Method: OECD T Remarks: No toxi	nagna (Water flea)): > 0.015 mg/l 3 h est Guideline 202 city at the limit of solubility.
T p	Toxicity ants	y to algae∕aquatic	:	NOEC (Pseudoki 0.08 mg/l Exposure time: 72 Method: OECD T Remarks: No toxi	rchneriella subcapitata (green algae)): >= 2 h est Guideline 201 city at the limit of solubility.
T ic	「oxicity city)	y to fish (Chronic tox-	:	NOEC (Zebrafish Exposure time: 2 Method: OECD T Remarks: No toxi): >= 0.049 mg/l 1 d est Guideline 204 city at the limit of solubility.
T a ic	Toxicity aquatic c toxic	/ to daphnia and other invertebrates (Chron- ity)	:	NOEC (Daphnia I Exposure time: 2 Method: OECD T	magna (Water flea)): 0.0736 µg/l 1 d est Guideline 211
P	Polvío	xy-1 2-ethanediyl) a	.[(to	trahvdro-2-furanv	1)methyl]-w-hydroxy-
T a	Toxicity aquatic	/ to daphnia and other invertebrates	:	EC50 (Daphnia m Exposure time: 44 Method: OECD T Remarks: Based	nagna (Water flea)): > 100 mg/l 3 h est Guideline 202 on data from similar materials
T p	oxicity ants	y to algae∕aquatic	:	EC50 (Pseudokin mg/l Exposure time: 72 Method: OECD T Remarks: Based EC10 (Pseudokin	chneriella subcapitata (green algae)): > 100 2 h est Guideline 201 on data from similar materials chneriella subcapitata (green algae)): > 100



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				mg/l Exposure time: 7 Method: OECD T Remarks: Based	2 h Test Guideline 201 on data from similar materials
	N,N-Di Toxicit	i ethyl-m-toluamide: y to fish	:	LC50 (Oncorhynd Exposure time: 9 Method: OECD T	chus mykiss (rainbow trout)): 97 mg/l 6 h Test Guideline 203
	Toxicit aquatio	y to daphnia and other c invertebrates	:	EC50 (Daphnia n Exposure time: 4	nagna (Water flea)): 75 mg/l 8 h
	Toxicit plants	y to algae/aquatic	:	ErC50 (Selenasti Exposure time: 7 Method: OECD T	rum capricornutum (green algae)): 41 mg/l 2 h Test Guideline 201
				NOEC (Selenast Exposure time: 7 Method: OECD T	rum capricornutum (green algae)): 7.6 mg/l 2 h ēst Guideline 201
	Toxicit aquatio ic toxic	y to daphnia and other c invertebrates (Chron- city)	:	NOEC (Daphnia Exposure time: 2	magna (Water flea)): 3.7 mg/l 1 d
	Acetoi Toxicit	ne: y to fish	:	LC50 (Oncorhynd Exposure time: 9	chus mykiss (rainbow trout)): 5,540 mg/l 6 h
	Toxicit aquatio	y to daphnia and other c invertebrates	:	EC50 (Daphnia p Exposure time: 4	oulex (Water flea)): 8,800 mg/l 8 h
	Toxicit plants	y to algae/aquatic	:	NOEC (Pseudoki mg/l Exposure time: 9	irchneriella subcapitata (green algae)): 7,000 6 h
	Toxicit aquatio ic toxic	y to daphnia and other c invertebrates (Chron- city)	:	NOEC (Daphnia Exposure time: 2 Method: OECD T	magna (Water flea)): >= 79 mg/l 1 d ⁻ est Guideline 211
	Toxicit	y to microorganisms	:	EC50: 61,150 mg Exposure time: 3 Method: ISO 819	g/l 0 min 2
	Persis	stence and degradabil	lity		
	<u>Comp</u>	onents:			
	N,N-Di Biodeo	i methylacetamide: gradability	:	Result: Not readi Biodegradation: Exposure time: 2 Remarks: The 10	ly biodegradable. 70 % 8 d day time window criterion is not fulfilled.



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Poly Biode	(oxy-1,2-ethanediyl), α egradability	- [(te :	trahydro-2-furan Result: Not read Method: OECD Remarks: Based	yl)methyl]-ω-hydroxy-: lily biodegradable. Test Guideline 301F d on data from similar materials
N,N-[Diethyl-m-toluamide:			
Biode	egradability	:	Result: Readily I Biodegradation: Exposure time: 2 Method: OECD	biodegradable. 83.8 % 28 d Test Guideline 301B
Acete	one:			
Biode	egradability	:	Result: Readily I Biodegradation: Exposure time: 2	biodegradable. 91 % 28 d
Bioa	ccumulative potential			
<u>Com</u>	ponents:			
Flura Bioac	alaner: accumulation	:	Species: Zebrafi Bioconcentration Method: OECD	ish n factor (BCF): 79.4 Test Guideline 305
Partit octar	ion coefficient: n- nol/water	:	log Pow: 4.5	
Poly	(oxy-1,2-ethanediyl), α	-[(te	trahydro-2-furan	yl)methyl]-ω-hydroxy-:
Partit octar	ion coefficient: n- nol/water	:	log Pow: < 4 Remarks: Calcu	lation
N.N-I	Diethvl-m-toluamide:			
Partit	ion coefficient: n- nol/water	:	log Pow: 2.02	
Acet e Partit octar	one: ion coefficient: n- nol/water	:	log Pow: -0.27 -	-0.23
Mobi	lity in soil			
<u>Com</u>	ponents:			
Flura Distri menta	llaner: bution among environ- al compartments	:	log Koc: 4.1	



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Othe	er adverse effects				
Com	<u>nponents:</u>				
Flur	alaner:				
Resu	ults of PBT and vPvB essment	:	This substance is lating and toxic (F	s not considered to be persistent, bioaccumu- PBT).	
SECTIO	N 13. DISPOSAL CONS	IDE	RATIONS		
Disp	osal methods				
Was	te from residues	:	Dispose of in acc Do not dispose o	ordance with local regulations. f waste into sewer.	
Contaminated packaging		:	Empty containers should be taken to an approved waste handling site for recycling or disposal. Empty containers retain residue and can be dangerous.		

death.

Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or

If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG UN number Proper shipping name Class Packing group Labels	:	UN 1090 ACETONE SOLUTION 3 II 3
IATA-DGR UN/ID No. Proper shipping name Class Packing group Labels Packing instruction (cargo aircraft) Packing instruction (passen- ger aircraft)		UN 1090 Acetone solution 3 II Flammable Liquids 364 353
IMDG-Code UN number Proper shipping name Class Packing group Labels EmS Code Marine pollutant	:	UN 1090 ACETONE SOLUTION (Fluralaner) 3 II 3 F-E, S-D yes



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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR		
UN/ID/NA number	:	UN 1090
Proper shipping name	:	Acetone SOLUTION
Class	:	3
Packing group	:	II
Labels	:	FLAMMABLE LIQUID
ERG Code	:	127
Marine pollutant	:	yes(Fluralaner)

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ	Calculated product RQ
		(lbs)	(lbs)
Acetone	67-64-1	5000	46728

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards	:	Flammable (gases, aerosols, liquids, or solids) Reproductive toxicity
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

N,N-Dimethylacetamide Fluralaner Poly(oxy-1,2-ethanediyl), α-[(tetrahydro-2-furanyl)methyl]-ω- bydroxy	127-19-5 864731-61-3 31692-85-0
N,N-Diethyl-m-toluamide	134-62-3
Acetone	67-64-1

California Prop. 65

WARNING: This product can expose you to chemicals including N,N-Dimethylacetamide, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



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Califor	nia List of Hazardous N,N-Dimethylaceta Acetone	s Substances mide	127-19-5 67-64-1	
California Permissible Exposure Limits for Chem N,N-Dimethylacetamide Acetone			nical Contaminants 127-19-5 67-64-1	
The ingredients of this product are reported in the following inventories: AICS : not determined				
DSL		: not determined		
IECSC		: not determined		

SECTION 16. OTHER INFORMATION

Further information



Full text of other abbreviations			
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)	
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)	
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits	
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Lim-	
		its for Air Contaminants	
ACGIH / TWA	:	8-hour, time-weighted average	
ACGIH / STEL	:	Short-term exposure limit	
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek	
OSHA Z-1 / TWA	:	8-hour time weighted average	



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AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC -International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose): MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance: PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to	:	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety		eChem Portal search results and European Chemicals Agen-
Data Sheet		cy, http://echa.europa.eu/

Revision Date

: 04/04/2023

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8