

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Molybdenum Granules

CAS #: 7439-98-7

Relevant identified uses of the substance: Scientific research and development

Supplier details:

Stanford Advanced Materials

E-mail: sales@samaterials.com

Tel: (949) 407-8904

Address: 23661 Birtcher Dr., Lake Forest, CA 92630 U.S.A.

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS02 Flame

Flam. Sol. 2 H228 Flammable solid.

Hazards not otherwise classified

No data available.

GHS label elements

The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

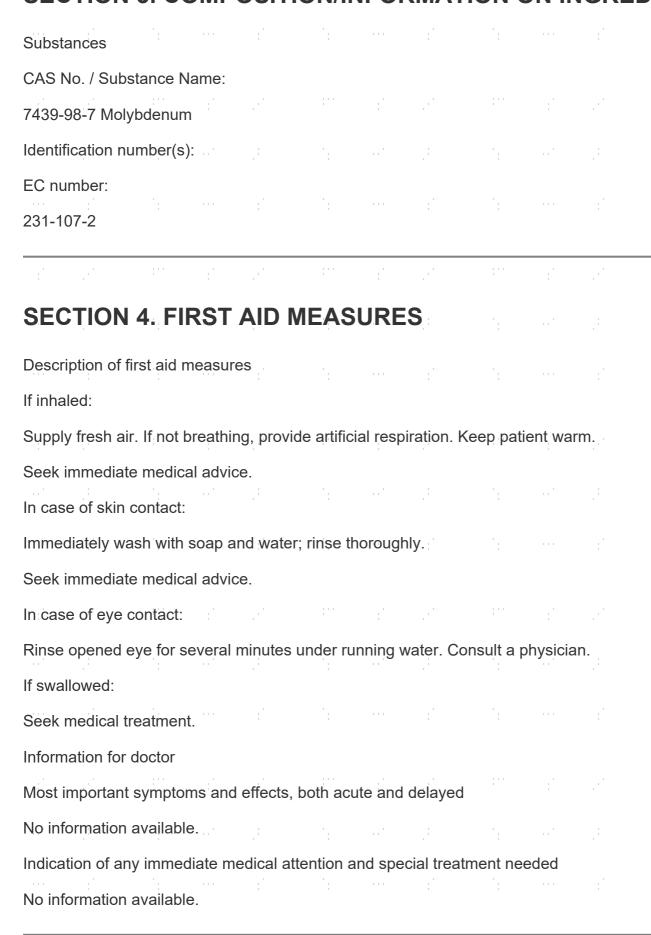
Hazard pictogram

GHS02

Signal word

Warning	· :		.:	1		.:	·;	'	.:		
Hazard statement											
H228 Flammable	solid.		i i	:		i e			:		
Precautionary stat	ements	3									
P210 Keep away	from he	eat/spai	rks/open f			aces. No	smokin	g.	.''	: ' '	
P280 Wear protect	_	_		othing/	eye pro	tection/fa	ce prote	ection.P	240 Grou	nd/bond	
P241 Use explosion	on-proc	of electr	rical/ventil	ating/lig	ghting/e	quipment	-		:		
P370+P378 In cas	se of fire	e: Use	for extinct	tion: CC)2, pow	der or wa	ter spra	ay.			
WHMIS classificat	tion	;		: '			: ' '	:		: "	
B4 - Flammable se	oļid		.:	· ;		.:	1	'	.:		
Classification syst			,								
HMIS ratings (sca			;	;		;	1		;		
(Hazardous Mater	ials Ide	entificat	ion Syster	m)						: ' '	
HEALTH		i			i			i			
FIRE	`:		.:	`;	'		`;	'		1	
REACTIVITY	`;		;'	· ;		;'	1		;'		
1											
2	: ' '	;			; '			; '		: ' '	
1 Health (acute effe	· ,		:	,	'	1			1		
Health (acute effe	cts) = 1		,	,		,	,		,	,	
Flammability = 2	`:		;	`:		:	`:		:	1	
Physical Hazard =	: 1										
Other hazards	: ' '	;		: '	; '		: ' '	: '	. "	: ' '	
Results of PBT an	d vPvE	asses	sment:	·:		,:	1		.:		
PBT:											
N/A.	`;		;	`;		:	`;		:		
vPvB:											
N/A.	!''	; '	. '		;		!''			:	

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS



SECTION 5. FIREFIGHTING MEASURES

Extinguishing media Suitable extinguishing media Special powder for metal fires. Do not use water. For safety reasons unsuitable extinguishing media Water Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released: Molybdenum oxides Advice for firefighters Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit. SECTION 6. ACCIDENTAL RELEASE MEASURES Personal precautions, protective equipment and emergency procedures Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation Keep away from ignition sources Environmental precautions: Do not allow material to be released to the environment without official permits. Methods and material for containment and cleanup:

Keep away from ignition sources.

Ensure adequate ventilation.

Prevention of secondary hazards:

Keep away from ignition sources.

Reference to other sections

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Handling

Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure adequate ventilation.

Information about protection against explosions and fires:

Protect against electrostatic charges.

Conditions for safe storage, including any incompatibilities

Storage

Requirements to be met by storerooms and receptacles:

Store in a cool location.

Information about storage in one common storage facility:

Store away from oxidizing agents.

Do not store together with acids.

Further information about storage conditions: Keep container tightly sealed.

Store in cool, dry conditions in well-sealed containers.

Specific end use(s)

No information available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average

face velocity of at least 100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:

7439-98-7 Molybdenum (100.0%)

PEL (USA) Long-term value: 5* 15** mg/m3

as Mo;*soluble compds.,

**insol.compds.:total dust

TLV (USA) Long-term value: 10* 3** mg/m3

as Mo; *inhalable fraction ** respirable fraction

EL (Canada) Long-term value: 3* 10** mg/m³

as Mo; *respirable **inhalable

EV (Canada) Long-term value: 10* 3** 0.5*** mg/m³

metal,insol.compd.:*inh;**resp;sol.compd.:***resp

Additional information:

No data

Exposure controls

Personal protective equipment

Follow typical general protective and industrial hygiene measures for handling chemicals.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Breathing equipment:

Use suitable respirator when high concentrations are present.

Recommended filter device for short term use:

Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls.

Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

Protection of hands:

Impervious gloves

Inspect gloves prior to use.

The selection of suitable gloves not only

depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

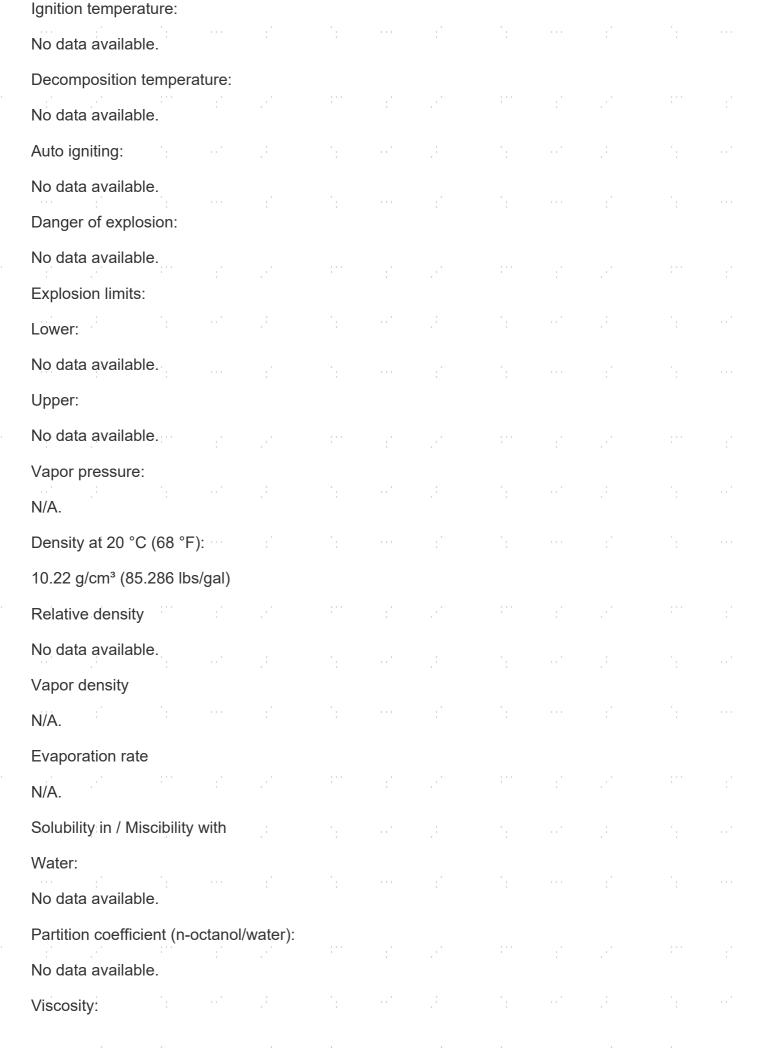
Material of gloves

Nitrile rubber, NBR

Glove thickness							1		:		
0.11 mm Eye protection:	:"	:	.e*		:'			1	, e ^t	:"	:
Safety glasses	· :		.:	·:		.:	' :	'		·:	
Body protection: Protective work of	lothing		;	1		:	1		:"	1;	
£	: ' '	;'		(1)	; '			:	, (*)	111	:
SECTION 9).; PH	IYSI	CAL	AND	CHE	MICA	L PR	OPE	RTIES	·;	
Information on ba	asic phy	ysical	and cher	mical _, pro	perties	;	· ;		;	1	
Appearance:											
Form:	: ' '	:			; '		: "				:
Powder Color:	`:	'		4	'	.:	4		,:	3	
gray	· ;		:	1:		:	' :		; '	1:	
Odor:											
Odorless	111	;'			: '	. '	: ' '	;		: ' '	:
Odor threshold: No data available		'	.;	1	'	.:	1		.:	1	
			; '	1		:	·:		:	1	
N/A.											
Melting point/rang	ge:	;		;**	: '		: "			;**	:
2623 °C (4753 °F	-) • ;		.:	1		.:	1		.:	· · ·	
Boiling point/rang	je:										
4639 °C (8382 °F	=)			1		1	:		:	<u>'</u> ;	
Sublimation temp	erature	e / stai	rt:	: "			:"			;**	
No data available											
Flammability (sol	id, gas)): ' '	.:	' :			' ;		.:	1:	

Penetration time of glove material (in minutes)

480



Highly flammable.

Dynamic:					.:	· ;				
N/A.Kinematic:										
N/A.		:	`:		;	`:		:	<u>':</u>	
Other information										
No information available	-	'	111	;		111	: '		!''	:
		.:	:			;			· ;	
SECTION 10. S	TAB	ILITY	AND	RE	ACTIV	ITY		:	1:	
Reactivity			111	, '		111	, '			
No data available.										'
Chemical stability	'		·:	'	, i	`:		.:	`:	
Stable under recommend	ded st	orage cor	nditions.		: '	·;		:	4	
Thermal decomposition	cond	itions to b	e avoid	ed:						
Decomposition will not o	cçur if	used and	d stored	accord	ding to sp	ecificati	ons.			; '
Possibility of hazardous	reaction									
No dangerous reactions	knowr		`: 		.:	`: -			`: 	
Conditions to avoid		:"	·:		:	·:		:	1:	
No information available										
Incompatible materials:	;	. "	: ' '	;	. '	: ' '	;		: ' '	:
Acids				'	į.				4,	
Oxidizing agents										
Hazardous decomposition	n pro	ducts:	·:		;	`:		:	`:	
Molybdenum oxides										
	i	<u> </u>		<u> </u>		-	;	<u> </u>	-	<u> </u>
	 2014		· ;		FODI		 201	.1	`:	

SECTION 11. TOXICOLOGICAL INFORMATION

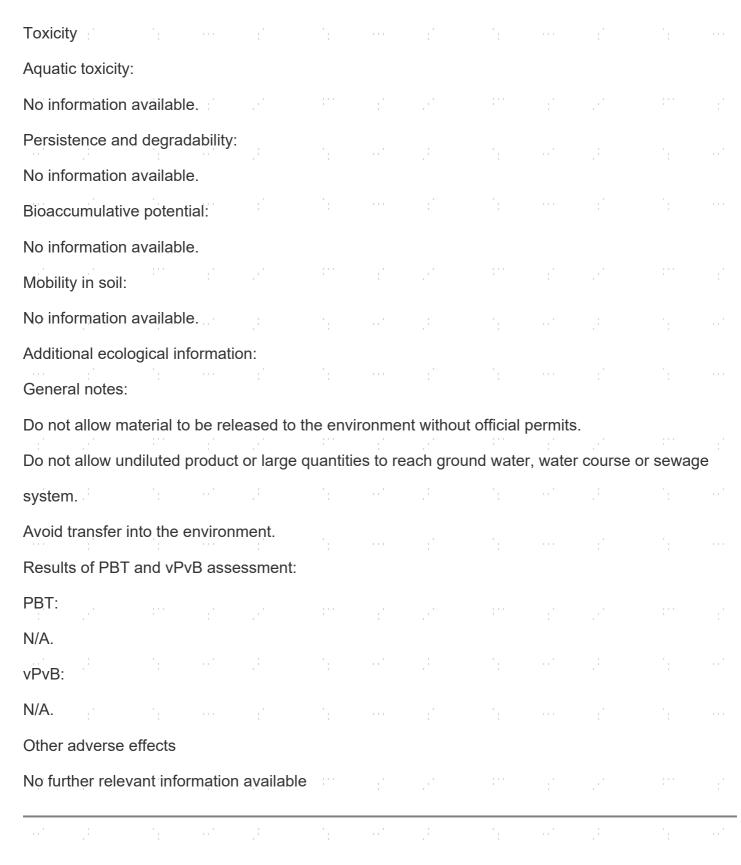
Information on toxicological effects

Acute toxicity:

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that a	re releva	ant for cl	assification	on:					4	
No data										
Skin irritation or corros	ion:	:	1		: '	<u>'</u> :		: '	`;	
May cause irritation										
Eye irritation or corrosi	on:	. '	111	;	'	; ' '	;	'	:	:
May cause irritation	"	.:	1		.;	1	'	.;	1	
Sensitization:									:	
No sensitizing effects l		i	i		i	i		i	i	
Germ cell mutagenicity	/:			, '	, '		,,		: "	
The Registry of Toxic I										
substance.	'	.:	1	'	.1	' ;		.1	1	
Carcinogenicity:		:	1		;	1		;		
No classification data										
NTP, OSHA or ACGIH			111	. '		;**	;		: ' '	:
Reproductive toxicity:										
The Registry of Toxic I	Effects o	f Chemi	cal Subst	tances	, ' i	:		.'	`:	
(RTECS) contains repr	roductive	e data fo	r this sub	stance	e. :	1		:	·:	
Specific target organ s	ystem to	oxicity - r	epeated	expos	ure:					
N/A	:	. * *	: "	;		: "	;		: ' '	:
Specific target organ s	ystem to	oxiçity - s	single exp	oosure	: ;	٠,		;		
N/A			,							
Aspiration hazard:N/A		:	1		:	·:		:	· ·	
Subacute to chronic to	xicity:									
The Registry of Toxic I	Effects o	f Chemi	cal Subst	tances	(RTEC	S) contair	ns mult	iple dose	e toxicity	data
for this substance.	'	.;	1		.:	1			·:	
Additional toxicological	l informa	ation:	1		;	' ;		:	1	
To the best of our know	wledge t	he acute	and chr	onic to	xicity of	this subs	tance i	s not full	y known	
<u> </u>	; '	, '	111	: '	, '	111	: '		111	:

SECTION 12. ECOLOGICAL INFORMATION



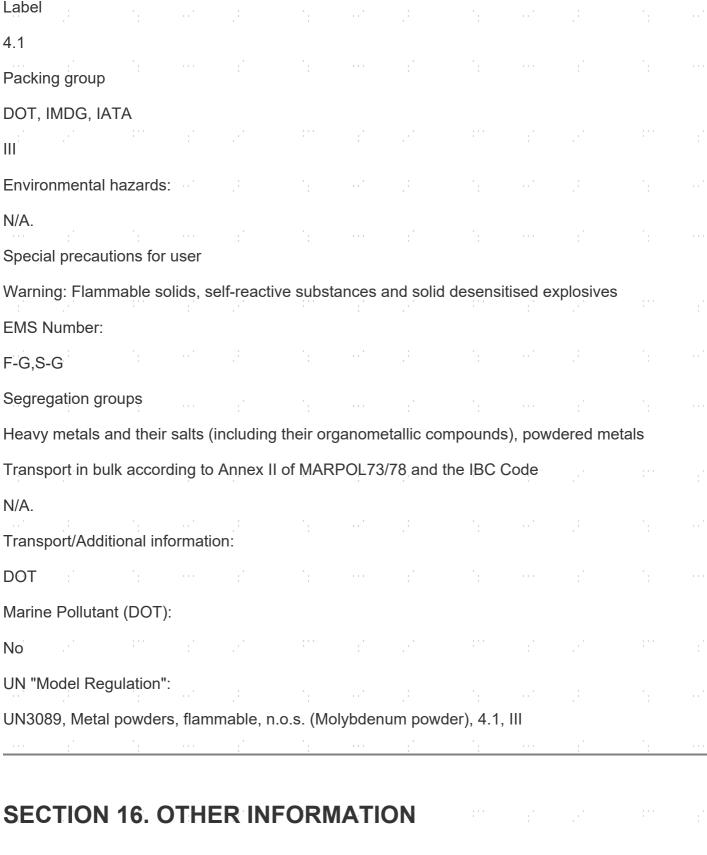
SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation:

Consult state, local or national regulations to ensure proper disposal.

Unclear	ned packag	gings:	'	, ;				' ;		,:		
	mendation:											
Disposa	al must be	made a	accord	ing to offic	cial regu	ulations	3	`: 		: '	`; 	
			1			: '		: ' '	:'		: ' '	: '
SEC	TION 1	4. TI	RAN	SPOR	T _i INF	FOR	MATIO	N		.:	·;	
UN-Nur	mber ; MDG, IATA			i'	1		t'	'n		t'	1	
UN308	.·*		;		: ' '	: '			;		:	: '
"	.:	1		.:	·:		.:	1		.:	·:	
SEC	TION 1	5. R	EGU	LATO	RY II	NFO	RMATI	ON				
UN prop	per shippin	g nam	е	i	i		i	i		i	i	
					; * *	:						
	owders, fla						r)					
IMDG, I	i ATA	' :	'		`: -	'		`;	'	.:	`;	
METAL	POWDER	, FLAN	/IMABI	LE, N.O.S	. (Molyk	odenun	n powder)	1		;	1	
Transpo	ort hazard (class(e	es)									
DOT	. "	: ' '	: '		: ' '	; '			:'		: ' '	:
Class	.:	٠,		1		'		,		;	٠,	
	nmable so											
Label	:	`:		:	·:		:	1		:	`;	
4.1 Class		: ' '	;		:	;'		;**	;			;
) Flammabl	le solic	ls, self	-reactive s	substan	ices an	d solid des	sensitis	ed exp	losives		
Label												
IMDG, I	IATA	:''	i'	2	111	:'	2		;	2		:
4.1 Flan	mmable so	lids se	elf-reac	ctive subst	ances a	and sol	id desensi	tised e	xplosive	es.	1	'



Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.