

Safety Data Sheet AKA020 Date of issue: 02/19/2015 Version: 1.0

Preduct form :: Substance Physical state :: Lquaid Substance name :: ALL/MINUM s-BUTOXIDE Formula :: C12H27AIO3 Synonyms :: ALL/MINUM TRI-see-BUTOXIDE Commission :: ALLMANUM TRI-see-BUTOXIDE Comm				
Product form I: Substance Physical state Liquid Substance name I: Liquid Substance name I: ALMANUM s-BUTOXIDE Product code I: AKAQ20 Synonyms I: C12H27AIO3 Synonyms I: ALLMINUM TRi-lece-BUTOXIDE Chemical family I: METAL ALCOHOLATE 12. Relevant identified uses of the substance or mixture and uses advised against Use of the substance/mixture I: Chemical intermediate for research and industrial use only 13. Details of the substance/mixture I: Createstant and industrial use only 14.4. Emergency number I: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International) SECTION 2: Hazard5 Identification I: Cleatification of the substance or mixture Classification (GHS-US) I: Warning Full set of H-phrases: see section 16 I: Substance 2.1. Classification of the substance or mixture Classification (GHS-US) I: Warning Full set of H-phrases: see section 16 I: Substance 2.2. Label elements GH3-UB Isbaling I: Substance broughy and vapor Hazard pictograms (GHS-US) I: Warning	SECTION 1: Identification of the su	bstance/mixture and of the company/undertaking		
Physical state : i. Liquid Substance name : ALUMINUM s-BUTOXIDE Product code : ALUMINUM s-BUTOXIDE Product code : C12H27A103 Synonyms : ALUMINUM TIslear-BUTOXIDE Chemical family : METAL ALCOHOLATE 1.2. Relevant identified uses of the substance or mixture and uses advised against Use of the substance of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Details of the supplier of the safety data sheet 61.2. Lister of Read Morrisolite, PA 19007 12.3. Label of continue 61.3. Details of the substance or mixture 71.3. Or (18.3.0.5.2.) 72.1. Classification of the substance or mixture 72.1. Label of continue 72.1. Classification of the Substance 72.1. Classification 72.3. Keep container labelitie and vapor 72.3. Keep container labelitie and vapor 72.3. Keep container labelity closed of continue and nearby here continue spatial No amoking 72.3. Keep container labelity closed 72.3. Keep con	1.1. Product identifier			
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2.3. Other hazards	Precautionary statements (GHS-US)	 P264 - Wash hands thoroughly after handling P210 - Keep away from heat, open flames, sparks No smoking P233 - Keep container tightly closed P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof electrical equipment P242 - Use only non-sparking tools P243 - Take precautionary measures against static discharge P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse skin with water/shower P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P337+P313 - If eye irritation persists: Get medical advice/attention P370+P378 - In case of fire: Use foam, carbon dioxide, dry chemical to extinguish P403+P235 - Keep in a cool place 		
	2.3. Other hazards			
	No additional information available			

Safety Data Sheet

SECTION 3: Composition/informat	tion on ingredie	ents		
3.1. Substance				
Substance type	: Mono-constit	uent		
Name	: ALUMINUM :	s-BUTOXIDE		
CAS No	: 2269-22-9			
EC no	: 218-871-2			
Name	Produ	uct identifier	%	Classification (GHS-US)
Aluminum s-butoxide	(CAS N	lo) 2269-22-9	> 95	Flam. Liq. 3, H226
2-Butanol	(045.1)	o) 78-92-2		Eye Irrit. 2A, H319 Flam. Lig. 3, H226
	(CAS N	0) 70-92-2		Eye Irrit. 2A, H319
				STOT SE 3, H336 STOT SE 3, H335
	I			
3.2. Mixture				
Not applicable				
SECTION 4: First aid measures				
4.1. Description of first aid measures				
First-aid measures general	medical advid	taminated clothing and shoes ce immediately (show the labe w packaging or label.		nt or if you feel unwell, seek If possible show this sheet; if n
First-aid measures after inhalation		m to fresh air and keep at res medical advice.	t in a position com	fortable for breathing. If you fee
First-aid measures after skin contact	: Wash with pl	enty of soap and water.		
First-aid measures after eye contact				minutes. Remove contact lenses
First-aid measures after ingestion		easy to do. Continue rinsing. (nything by mouth to an uncon		
-	Ŭ		iscidus person. Ge	
4.2. Most important symptoms and eff				
Symptoms/injuries after inhalation		ritation to the respiratory tract	i.	
Symptoms/injuries after skin contact	: May cause sl			
Symptoms/injuries after eye contact		ous eye irritation.		
Symptoms/injuries after ingestion	•	ful if swallowed.		
4.3. Indication of any immediate medi	cal attention and s	pecial treatment needed		
No additional information available				
SECTION 5: Firefighting measures				
5.1. Extinguishing media				
Suitable extinguishing media	: Foam. Carbo	on dioxide. Dry chemical.		
Unsuitable extinguishing media	: Avoid water	spray as s-butanol will be gen	erated.	
5.2. Special hazards arising from the	substance or mixtr	ure		
			a and argonia asi	d vapors may develop when
Fire hazard		quid and vapor. Irritating tume	es and organic aci	
Fire hazard		quid and vapor. Irritating tume posed to elevated temperatu		
Fire hazard 5.3. Advice for firefighters				
	material is ex		res or open flame.	
5.3. Advice for firefighters Firefighting instructions	material is ex : Exercise cau	posed to elevated temperature	res or open flame. cal fire.	ncluding respiratory protection.
5.3. Advice for firefighters Firefighting instructions	material is ex : Exercise cau : Do not enter	posed to elevated temperature	res or open flame. cal fire. ctive equipment, ir	
5.3. Advice for firefighters Firefighting instructions Protection during firefighting	material is ex : Exercise cau : Do not enter Avoid all eye	posed to elevated temperature tion when fighting any chemic fire area without proper prote	res or open flame. cal fire. ctive equipment, ir	
5.3. Advice for firefighters Firefighting instructions Protection during firefighting SECTION 6: Accidental release me	material is ex : Exercise cau : Do not enter Avoid all eye	posed to elevated temperature tion when fighting any chemic fire area without proper prote and skin contact and do not b	res or open flame. cal fire. ctive equipment, ir	
5.3. Advice for firefighters	material is ex : Exercise cau : Do not enter Avoid all eye easures equipment and em	posed to elevated temperature tion when fighting any chemic fire area without proper prote and skin contact and do not b	res or open flame. cal fire. ctive equipment, in breathe vapor and	mist.
5.3. Advice for firefighters Firefighting instructions Protection during firefighting SECTION 6: Accidental release mediation 6.1. Personal precautions, protective General measures	material is ex : Exercise cau : Do not enter Avoid all eye easures equipment and em	posed to elevated temperature tion when fighting any chemic fire area without proper prote and skin contact and do not b pergency procedures	res or open flame. cal fire. ctive equipment, in breathe vapor and	mist.
5.3. Advice for firefighters Firefighting instructions Protection during firefighting SECTION 6: Accidental release mediate 6.1. Personal precautions, protective General measures 6.1.1. For non-emergency personnel	material is ex : Exercise cau : Do not enter Avoid all eye easures equipment and em : Remove ignit	tion when fighting any chemic fire area without proper prote and skin contact and do not b nergency procedures tion sources. Use special care	res or open flame. cal fire. ctive equipment, in breathe vapor and	mist.
5.3. Advice for firefighters Firefighting instructions Protection during firefighting SECTION 6: Accidental release mediation 6.1. Personal precautions, protective General measures	material is ex : Exercise cau : Do not enter Avoid all eye easures equipment and em : Remove ignit	posed to elevated temperature tion when fighting any chemic fire area without proper prote and skin contact and do not b pergency procedures	res or open flame. cal fire. ctive equipment, in breathe vapor and	mist.
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Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

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6.3. Methods and mate	erial for containment and cleaning up	
Methods for cleaning up	: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal. Use only non-sparking tools.	
6.4. Reference to othe	r sections	
See Heading 8. Exposure co	ntrols and personal protection.	
SECTION 7: Handling	and storage	
7.1. Precautions for sa		
Precautions for safe handling	: Avoid all eye and skin cor process area to prevent a	ntact and do not breathe vapor and mist. Provide good ventilation in accumulation of vapors. Containers and transfer lines require not allow vapors or dust to accumulate in work areas. Use only non-
Hygiene measures	 Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse. 	
7.2. Conditions for sat	fe storage, including any incompatibilities	
Fechnical measures	: Ground/bond container a	nd receiving equipment.
Storage conditions	: Keep container tightly close	sed.
ncompatible materials	: Water.	
Storage area	: Store in a well-ventilated	place. Store away from heat.
7.3. Specific end use(s	s)	
lo additional information ava	ilable	
SECTION 8: Exposure	controls/personal protection	
3.1. Control parameter	rs	
2-Butanol (78-92-2)		
USA ACGIH	ACGIH TWA (ppm)	100 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	305 mg/m ³
USA NIOSH	NIOSH REL (TWA) (ppm)	100 ppm
USA NIOSH	NIOSH REL (STEL) (mg/m ³)	455 mg/m ³
USA NIOSH	NIOSH REL (STEL) (ppm)	150 ppm
USA OSHA		450 mg/m ³
	OSHA PEL (TWA) (mg/m ³)	
USA OSHA	OSHA PEL (TWA) (ppm)	150 ppm
USA IDLH	US IDLH (ppm)	2000 ppm
3.2. Exposure controls		
Appropriate engineering cont		
Personal protective equipmen		posure. Emergency eye wash fountains and safety showers should be vicinity of any potential exposure.
land protection	: Neoprene or nitrile rubber	gloves.
ye protection		ct lenses should not be worn.
	: Wear suitable protective clothing.	
Skin and body protection	: vvear suitable protective of	Journing.

9.1. Information on basic physical and	a chemical properties
Physical state	: Liquid
Appearance	: Liquid. Viscous.
Molecular mass	: 246.32 g/mol
Color	: Pale yellow. Amber.
Odor	: Slight odor of s-butanol.
Odor threshold	: No data available
Refractive index	: 1.438
рН	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: < 0 °C
Freezing point	: No data available
Boiling point	: 200 - 206 °C @ 30 mm Hg

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Flash point	: 27 °C		
Auto-ignition temperature	: No data available		
Decomposition temperature	: No data available		
Flammability (solid, gas)	: Flammable liquid and vapor		
Vapor pressure	: No data available		
Relative vapor density at 20 °C	: >1		
Relative density	: 0.9671		
VOC content	: >25 %		
Solubility	: Reacts with water.		
Log Pow	: No data available		
Log Kow	: No data available		
Viscosity, kinematic	: No data available		
Viscosity, dynamic	: No data available		
Explosive properties	: No data available		
Oxidizing properties	: No data available		
Explosive limits	: No data available		
9.2. Other information No additional information available			
SECTION 10: Stability and reactivit	у		
10.1. Reactivity			
No additional information available			
10.2. Chemical stability			
Stable.			
10.3. Possibility of hazardous reactions			
	by reaction with moisture, liberating s-butanol and aluminum hydroxide.		
10.4. Conditions to avoid			
Heat. Open flame. Sparks.			
10.5. Incompatible materials Water.			
10.6. Hazardous decomposition produc			
Aluminum oxides. s-Butanol. Organic acid vap	ors.		
SECTION 11: Toxicological informa	ation		
11.1. Information on toxicological effect	ts		
Acute toxicity	: Not classified		
2-Butanol (78-92-2)			
LD50 oral rat	2200 mg/kg		
LD50 dermal rabbit	> 2000 mg/kg		
ATE US (oral) 2200.000 mg/kg body weight			
Skin corrosion/irritation : Not classified			
Serious eye damage/irritation			
Respiratory or skin sensitization	: Not classified		
Germ cell mutagenicity	: Not classified		
Carcinogenicity	: Not classified		
Reproductive toxicity	: Not classified		
Specific target organ toxicity (single exposure)	organ toxicity (single exposure) : Not classified		
Specific target organ toxicity (repeated exposure)	ed : Not classified		
Aspiration hazard	piration hazard : Not classified		
Symptoms/injuries after inhalation	: May cause irritation to the respiratory tract.		
Symptomoliniurion ofter akin contact	. May cause alia initiation		

Symptoms/injuries after skin contact : May cause skin irritation.

- Symptoms/injuries after eye contact : Causes serious eye irritation.
- Symptoms/injuries after ingestion : May be harmful if swallowed. Reason for classification
 - : Expert judgment

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SECTION 12: Ecological information			
12.1. Toxicity			
-			
2-Butanol (78-92-2)	2200 2000 m n// /Evenesure firmer 00 h . On exists Dimensional sector ((assumptions))		
LC50 fish 1	3380 - 3990 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through]) 1859 - 7143 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])		
EC50 Daphnia 1	1039 - 7143 mg/r (Exposure time: 46 n - Species: Daprinia magna [Static])		
12.2. Persistence and degradability			
No additional information available			
12.3. Bioaccumulative potential			
2-Butanol (78-92-2)			
Log Pow	0.6		
12.4. Mobility in soil	·		
No additional information available			
12.5. Other adverse effects			
Effect on ozone layer	: No additional information available		
Effect on the global warming	: No known ecological damage caused by this product.		
SECTION 13: Disposal consideration	s		
13.1. Waste treatment methods			
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations. Dispose of		
	contents/container to licensed waste disposal facility.		
Ecology - waste materials	: Avoid release to the environment.		
SECTION 14: Transport information			
14.1. UN number			
UN-No.(DOT)	: 1993		
DOT NA no.	UN1993		
14.2. UN proper shipping name			
Proper Shipping Name (DOT)	: Flammable liquids, n.o.s.		
	(ALUMINUM s-BUTOXIDE)		
Department of Transportation (DOT) Hazard	: 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120		
Classes	0. Elementale l'avid		
Hazard labels (DOT)	: 3 - Flammable liquid		
	3		
DOT Symbols	: G - Identifies PSN requiring a technical name		
Packing group (DOT)	: III - Minor Danger		
DOT Packaging Exceptions (49 CFR 173.xxx)	: 150		
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 203		
DOT Packaging Bulk (49 CFR 173.xxx)	: 242		
14.3. Additional information			
Other information	: No supplementary information available.		
Transport by sea			
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a		
	passenger vessel.		
Air transport			
Air transport	. 601		
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	. 00 L		
DOT Quantity Limitations Cargo aircraft only (49	: 220 L		
CFR 175.75)	·		
SECTION 15: Regulatory information			
15.1. US Federal regulations			

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Aluminum s-butoxide (22	69-22-9)			
Listed on the United States TSCA (Toxic Substances Control Act) inventory				
2-Butanol (78-92-2)				
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313				
SARA Section 313 - Emission Reporting 1.0 %				
15.2. International regulation	ons			
Aluminum s-butoxide (22	69-22-9)			
	ian Inventory of Chemical Su	ibstances)		
	L (Domestic Sustances List)	inces Produced or Imported in	China)	
		bry of Existing Commercial Che		
Listed on the Japanese EN	CS (Existing & New Chemica		,	
Listed on the Korean ECL (Listed on NZIoC (New Zeal	Existing Chemicals List) and Inventory of Chemicals)			
	es Inventory of Chemicals an	d Chemical Substances)		
2-Butanol (78-92-2)				
	ian Inventory of Chemical Su	ibstances)		
	L (Domestic Sustances List) of Existing Chemical Substa	ances Produced or Imported in	China)	
Listed on the EEC inventor	y EINECS (European Invento	ory of Existing Commercial Che		
	CS (Existing & New Chemica IL (Industrial Safety and Hea			
Listed on the Korean ECL (iui Law)		
	and Inventory of Chemicals)			
	es Inventory of Chemicals an (Ingredient Disclosure List)	d Chemical Substances)		
	(0)			
15.3. US State regulations				
ALUMINUM s-BUTOXIDE(2	269-22-9)			
U.S California - Proposition		No		
U.S California - Proposition Toxicity	n 65 - Developmental	No		
U.S California - Propositior Toxicity - Female	n 65 - Reproductive	No		
U.S California - Proposition Toxicity - Male	n 65 - Reproductive	No		
Aluminum s-butoxide (226	9-22-9)			
U.S California -	U.S California -	U.S California -	U.S California -	No significance risk level
Proposition 65 - Carcinogens List	Proposition 65 - Developmental Toxicity	Proposition 65 - Reproductive Toxicity -	Proposition 65 - Reproductive Toxicity -	(NSRL)
		Female	Male	
No	No	No	No	
2-Butanol (78-92-2)				
U.S California -	U.S California -	U.S California -	U.S California -	No significance risk level
Proposition 65 - Carcinogens List	Proposition 65 - Developmental Toxicity	Proposition 65 - Reproductive Toxicity -	Proposition 65 - Reproductive Toxicity -	(NSRL)
	Developmental roxietty	Female	Male	
No	No	No	No	
2-Butanol (78-92-2)				
U.S California - Toxic Air C	Contaminant List (AB 1807 A	B 2728)		
U.S Connecticut - Hazardo	ous Air Pollutants - HLVs (30	min)		
U.S Connecticut - Hazardo U.S Delaware - Pollutant D				
		ceptable Ambient Concentratio	ns	
U.S Idaho - Non-Carcinoge		ission Levels (ELs)		
U.S Idaho - Occupational E U.S Massachusetts - Oil &		oundwater Reportable Concen	tration - Reporting Category 1	
U.S Massachusetts - Oil &	Hazardous Material List - Gr	oundwater Reportable Concen		
U.S Massachusetts - Oil & U.S Massachusetts - Oil &		portable Quantity il Reportable Concentration - F	Reporting Category 1	
U.S Massachusetts - Oil &	Hazardous Material List - Sc	il Reportable Concentration - F		
U.S Massachusetts - Right				
U.S Massachusetts - Toxic U.S Michigan - Occupation				
U.S Minnesota - Hazardous Substance List				
U.S Minnesota - Permissible Exposure Limits - TWAs				
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- U.S. New Hampshire Regulated Toxic Air Pollutants Ambient Air Levels (AALs) 24-Hour
- U.S. New Hampshire Regulated Toxic Air Pollutants Ambient Air Levels (AALs) Annual
- U.S. New Jersey Discharge Prevention List of Hazardous Substances
- U.S. New Jersey Environmental Hazardous Substances List U.S. New Jersey Right to Know Hazardous Substance List
- U.S. New Jersey Special Health Hazards Substances List
- U.S. New York Occupational Exposure Limits TWAs
- U.S. North Dakota Air Pollutants Guideline Concentrations 8-Hour
- U.S. Oregon Permissible Exposure Limits TWAs U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
- U.S. Pennsylvania RTK (Right to Know) List
- U.S. Tennessee Occupational Exposure Limits TWAs
- U.S. Texas Effects Screening Levels Long Term
- U.S. Texas Effects Screening Levels Short Term
- U.S. Vermont Permissible Exposure Limits TWAs
- U.S. Washington Permissible Exposure Limits STELs
- U.S. Washington Permissible Exposure Limits TWAs

SECTION 16: Other information

Abbreviations and acronyms

: Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; ": "C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemcial Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development.

Full text of H-phrases.

-uii tex	at of H-phrases	
	Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
	Flam. Liq. 3	Flammable liquids Category 3
	STOT SE 3	Specific target organ toxicity (single exposure) Category 3
	STOT SE 3	Specific target organ toxicity (single exposure) Category 3
	H226	Flammable liquid and vapor
	H319	Causes serious eye irritation
	H335	May cause respiratory irritation
	H336	May cause drowsiness or dizziness

HMIS III Rating

Health

: 2 Moderate Hazard - Temporary or minor injury may occur

Flammability Physical

- : 3 Serious Hazard : 1 Slight Hazard
- Prepared by safety and environmental affairs.

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According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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