TRIISOBUTYLALUMINUM

TIA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms	Liquid Colorless
Aluminum triisobutyl TIBA Tibal	IGNITES WHEN EXPOSED TO AIR. Flammable gas is produced on contact with water.

Evacuate.
Keep people away. Avoid contact with liquid and vapor.
Shut off ignition sources and call fire department.
Wear rubber overclothing (including gloves).
Notify local health and pollution control agencies.
Protect water intakes.

Fire

IGNITES WHEN EXPOSED TO AIR.
POISONOUS GASES MAY BE PRODUCED IN FIRE.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry graphite, soda ash, or other inert powder.
DO NOT USE WATER, FOAM, CARBON DIOXIDE, DRY CHEMICALS OR VAPORIZING LIQUIDS ON FIRE.

Exposure

Call for medical aid.

LIQUID
Will burn skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: $(iso\text{-}C_4H_9)_3Al$
2.3 IMO/UN Designation: 4.2/1930
2.4 DOT ID No.: Not listed.
2.5 CAS Registry No.: Currently not available
2.6 NAERG Guide No.: Not listed
2.7 Standard Industrial Trade Classification: 51550

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Full protective clothing, preferably of aluminized glass cloth; goggles; face shield; gloves. In case of fire, all-purpose canister or self-contained breathing apparatus.
3.2 Symptoms Following Exposure: Inhalation of smoke from fire causes metal-fume fever (flu-like symptoms). Contact with liquid can cause severe burns of eyes and skin because of spontaneous ignition.
3.3 Treatment of Exposure: INHALATION: only fumes from fire need be considered; metal-fume fever lasts less than 36 hrs. and is not critical. EYES: flush gently with copious quantities of water for 15 min. with lids open; treat burns, if fire occurred; get medical attention. SKIN: wash with water; treat burns caused by fire; get medical attention. INGESTION: not pertinent
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Not pertinent
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Metal fume fever may develop following exposure to smoke from fire.
3.10 Vapor (Gas) Irritant Characteristics: Not pertinent
3.11 Liquid or Solid Characteristics: Severe skin irritant. Causes second- and third-degree burns on short contact and is very injurious to the eyes.
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: Not listed.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: Not pertinent (ignites spontaneously)
4.2 Flammable Limits in Air: Not pertinent
4.3 Fire Extinguishing Agents: Inert powder (e.g., sand, limestone), dry chemical
4.4 Fire Extinguishing Agents Not to Be Used: Water, foam, halogenated extinguishing agents
4.5 Special Hazards of Combustion Products: Dense smoke may cause metal-fume fever.
4.6 Behavior in Fire: Dense smoke of aluminum oxide forms.
4.7 Auto Ignition Temperature: Ignites spontaneously under ambient conditions
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: Not pertinent
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 92.8 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 26.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: Reacts violently to form flammable hydrocarbon gases
5.2 Reactivity with Common Materials: Not compatible with silicone rubber or urethane rubber
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: Not pertinent
6.2 Waterfowl Toxicity: Not pertinent
6.3 Biological Oxygen Demand (BOD): None
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile: Not listed

7. SHIPPING INFORMATION

7.1 Grades of Purity: Technical, 95+%; 20% or less by weight in benzene, hexane, or heptane (solutions are not pyrophoric); electronic grade.
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: Inerted; dry nitrogen at 5 psig.
7.4 Venting: Safety relief, with rupture disc
7.5 IMO Pollution Category: Currently not available
7.6 Ship Type: Currently not available
7.7 Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Not listed.
8.2 49 CFR Class: Not pertinent.
8.3 49 CFR Package Group: Not listed.
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	1
Flammability (Red).....	3
Instability (Yellow).....	3
Special (White).....	W

* Refers to 20% or less by weight in hydrocarbon solution.

8.6 EPA Reportable Quantity: Not listed.
8.7 EPA Pollution Category: Not listed.
8.8 RCRA Waste Number: Not listed
8.9 EPA FWPCA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 198.3
9.3 Boiling Point at 1 atm: 414°F = 212°C = 485°K
9.4 Freezing Point: 33.8°F = 1.0°C = 274.2°K
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 0.788 at 20°C (liquid)
9.8 Liquid Surface Tension: (est.) 24 dynes/cm = 0.024 N/m at 20°C
9.9 Liquid Water Interfacial Tension: Not pertinent
9.10 Vapor (Gas) Specific Gravity: Not pertinent
9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
9.12 Latent Heat of Vaporization: 101 Btu/ = 56 cal/g = 2.3 X 10^5 J/kg
9.13 Heat of Combustion: –18,423 Btu/lb = –10,235 cal/g = –428.23 X 10^5 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: Currently not available
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY	
Temperature (degrees F)	Pounds per cubic foot
40	50.200
50	49.830
60	49.460
70	49.090
80	48.720
90	48.350
100	47.980
110	47.610
120	47.230
130	46.860
140	46.490
150	46.120
160	45.750
170	45.380
180	45.010
190	44.640
200	44.270
210	43.890

9.21 LIQUID HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
52	0.526
54	0.527
56	0.528
58	0.529
60	0.531
62	0.532
64	0.533
66	0.534
68	0.535
70	0.536
72	0.537
74	0.538
76	0.539
78	0.541
80	0.542
82	0.543
84	0.544
86	0.545

9.22 LIQUID THERMAL CONDUCTIVITY	
Temperature (degrees F)	British thermal unit inch per hour-square foot-F
52	1.129
54	1.129
56	1.129
58	1.129
60	1.129
62	1.129
64	1.129
66	1.129
68	1.129
70	1.129
72	1.129
74	1.129
76	1.129
78	1.129
80	1.129
82	1.129
84	1.129
86	1.129

9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Centipoise
55	2.739
60	2.555
65	2.386
70	2.232
75	2.090
80	1.959
85	1.839
90	1.728
95	1.626
100	1.531
105	1.444
110	1.362
115	1.287
120	1.217
125	1.152
130	1.092
135	1.035
140	0.983
145	0.933
150	0.887
155	0.844
160	0.804
165	0.766
170	0.731
175	0.698

9.24 SOLUBILITY IN WATER	
Temperature (degrees F)	Pounds per 100 pounds of water
	R
	E
	A
	C
	T
	S

9.25 SATURATED VAPOR PRESSURE	
Temperature (degrees F)	Pounds per square inch
135	0.030
140	0.035
145	0.042
150	0.050
155	0.059
160	0.069
165	0.081
170	0.095
175	0.110
180	0.128
185	0.148
190	0.171

9.26 SATURATED VAPOR DENSITY	
Temperature (degrees F)	Pounds per cubic foot
135	0.00092
140	0.00109
145	0.00128
150	0.00151
155	0.00177
160	0.00206
165	0.00239
170	0.00277
175	0.00321
180	0.00369
185	0.00424
190	0.00486

9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
	N
	O
	T
	P
	E
	R
	T
	I
	N
	E
	N
	T