

ISOBUTYL ACETATE

IBA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Acetic acid, isobutyl ester 2-Methyl-1-propyl acetate beta-Methylpropyl ethanoate	Watery liquid Colorless Floats on water. Flammable, irritating vapor is produced.	Pleasant fruity odor
<p>Keep people away. Shut off ignition sources and call fire department. Avoid contact with liquid and vapor. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies.</p>		
Fire	FLAMMABLE Flashback along vapor trail may occur. May explode if ignited in an enclosed area. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.	
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled, will cause nausea, vomiting, dizziness, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Irritating to skin and eyes. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water.	
Water Pollution	Effect of low concentrations on aquatic life is unknown. Fouling to shoreline. 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 Contain Collection Systems: Skim Clean shore line Salvage waterfowl	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 34; Ester 2.2 Formula: CH ₃ COOCH ₂ CH(CH ₃) ₂ 2.3 IMO/UN Designation: 3.2/1213 2.4 DOT ID No.: 1213 2.5 CAS Registry No.: 110-19-0 2.6 NAERG Guide No.: 129 2.7 Standard Industrial Trade Classification: 51372
3. HEALTH HAZARDS	
3.1 Personal Protective Equipment: Air pack or organic canister mask; chemical goggles.	
3.2 Symptoms Following Exposure: Vapors may irritate upper respiratory tract and cause nausea, vomiting, dizziness and loss of consciousness. Liquid irritates eyes and may irritate skin.	
3.3 Treatment of Exposure: INHALATION: remove from exposure; if breathing is irregular or has stopped, start resuscitation and give oxygen; call a doctor. EYES: flush with water for at least 15 minutes.	
3.4 TLV-TWA: 150 ppm	
3.5 TLV-STEL: Not listed.	
3.6 TLV-Ceiling: Not listed.	
3.7 Toxicity by Ingestion: Currently not available	
3.8 Toxicity by Inhalation: Currently not available.	
3.9 Chronic Toxicity: Currently not available	
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.	
3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.	
3.12 Odor Threshold: Currently not available	
3.13 IDLH Value: 1,300 ppm	
3.14 OSHA PEL-TWA: 150 ppm	
3.15 OSHA PEL-STEL: Not listed.	
3.16 OSHA PEL-Ceiling: Not listed.	
3.17 EPA AERG: Not listed	

4. FIRE HAZARDS 4.1 Flash Point: 85°F O.C. 62°F C.C. 4.2 Flammable Limits in Air: 2.4%-10.5% 4.3 Fire Extinguishing Agents: Foam, carbon dioxide and dry chemical 4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective 4.5 Special Hazards of Combustion Products: Not pertinent 4.6 Behavior in Fire: Not pertinent 4.7 Auto Ignition Temperature: 793°F 4.8 Electrical Hazards: Class I, group D 4.9 Burning Rate: Currently not available 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 38.1 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 12.0 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7. SHIPPING INFORMATION 7.1 Grades of Purity: 95-99+%								
8. HAZARD CLASSIFICATIONS 8.1 49 CFR Category: Flammable liquid 8.2 49 CFR Class: 3 8.3 49 CFR Package Group: II 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification:									
<table border="0"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue).....</td> <td>1</td> </tr> <tr> <td>Flammability (Red).....</td> <td>3</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>0</td> </tr> </table>		Category	Classification	Health Hazard (Blue).....	1	Flammability (Red).....	3	Instability (Yellow).....	0
Category	Classification								
Health Hazard (Blue).....	1								
Flammability (Red).....	3								
Instability (Yellow).....	0								
8.6 EPA Reportable Quantity: 5000 pounds 8.7 EPA Pollution Category: D 8.8 RCRA Waste Number: Not listed 8.9 EPA FWCRA List: Not listed									
9. PHYSICAL & CHEMICAL PROPERTIES									
9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 116.16 9.3 Boiling Point at 1 atm: 243.1°F = 117.3°C = 390.5°K 9.4 Freezing Point: -142.8°F = -97.1°C = 176.1°K 9.5 Critical Temperature: 564.8°F = 296°C = 569.2°K 9.6 Critical Pressure: 470 psia = 32 atm = 3.2 MN/m ² 9.7 Specific Gravity: 0.871 at 20°C (liquid) 9.8 Liquid Surface Tension: 23.7 dynes/cm = 0.0237 N/m at 20°C 9.9 Liquid Water Interfacial Tension: (est.) 40 dynes/cm = 0.04 N/m at 20°C 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: 133 Btu/lb = 73.7 cal/g = 3.09 X 10 ⁶ J/kg 9.13 Heat of Combustion: (est.) -13,000 Btu/lb = -7220 cal/g = -302 X 10 ⁶ 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: 0.4 psia									

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
35	55.570	40	0.449	32	1.040	40	0.922
40	55.390	50	0.453	34	1.040	50	0.843
45	55.210	60	0.456	36	1.040	60	0.773
50	55.030	70	0.460	38	1.040	70	0.711
55	54.850	80	0.464	40	1.040	80	0.657
60	54.670	90	0.467	42	1.040	90	0.608
65	54.490	100	0.471	44	1.040	100	0.564
70	54.310	110	0.475	46	1.040	110	0.525
75	54.130	120	0.478	48	1.040	120	0.490
80	53.950	130	0.482	50	1.040	130	0.458
85	53.770	140	0.486	52	1.040	140	0.430
90	53.590	150	0.489	54	1.040	150	0.404
95	53.410	160	0.493	56	1.040	160	0.380
100	53.230	170	0.497	58	1.040	170	0.358
		180	0.500	60	1.040	180	0.338
		190	0.504	62	1.040	190	0.320
		200	0.508	64	1.040	200	0.304
		210	0.511	66	1.040	210	0.288
		220	0.515				
		230	0.519				

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
68	0.600	60	0.188	60	0.00392	0	0.332
		70	0.264	70	0.00539	25	0.351
		80	0.364	80	0.00731	50	0.371
		90	0.495	90	0.00975	75	0.391
		100	0.664	100	0.01285	100	0.411
		110	0.879	110	0.01671	125	0.431
		120	1.150	120	0.02147	150	0.451
		130	1.487	130	0.02729	175	0.472
		140	1.902	140	0.03432	200	0.493
		150	2.408	150	0.04274	225	0.514
		160	3.021	160	0.05275	250	0.535
		170	3.756	170	0.06455	275	0.556
		180	4.631	180	0.07834	300	0.578
		190	5.665	190	0.09436	325	0.600
		200	6.878	200	0.11280	350	0.622
		210	8.293	210	0.13400	375	0.645
		220	9.932	220	0.15810	400	0.667
		230	11.820	230	0.18550	425	0.690
		240	13.980	240	0.21620	450	0.713
		250	16.450	250	0.25080	475	0.736
		260	19.240	260	0.28930	500	0.760
		270	22.400	270	0.33210	525	0.783
		280	25.940	280	0.37950	550	0.807
		290	29.900	290	0.43170	575	0.831
		300	34.320	300	0.48890	600	0.856