

# ISOBUTYL ACETATE

IBA

## CAUTIONARY RESPONSE INFORMATION

|  |  |  |  |               |           |                      |
|--|--|--|--|---------------|-----------|----------------------|
| <b>Common Synonyms</b><br>Acetic acid, isobutyl ester<br>2-Methyl-1-propyl acetate<br>beta-Methylpropyl ethanoate  |  |  |  | Watery liquid | Colorless | Pleasant fruity odor |
| Floats on water. Flammable, irritating vapor is produced.  |  |  |  |               |           |                      |
| <p>Keep people away.<br/>Shut off ignition sources and call fire department.<br/>Avoid contact with liquid and vapor.<br/>Stay upwind and use water spray to "knock down" vapor.<br/>Notify local health and pollution control agencies.</p> |  |  |  |               |           |                      |
| <b>Fire</b>  | <p><b>FLAMMABLE.</b><br/>Flashback along vapor trail may occur.<br/>May explode if ignited in an enclosed area.<br/>Extinguish with dry chemical, alcohol foam, or carbon dioxide.<br/>Water may be ineffective on fire.<br/>Cool exposed containers with water.</p>   |  |  |               |           |                      |
| <b>Exposure</b>  | <p>CALL FOR MEDICAL AID.</p> <p><b>VAPOR</b><br/>Irritating to eyes, nose and throat.<br/>If inhaled, will cause nausea, vomiting, dizziness, or loss of consciousness.<br/>Move to fresh air.<br/>If breathing has stopped, give artificial respiration.<br/>If breathing is difficult, give oxygen.</p> <p><b>LIQUID</b><br/>Irritating to skin and eyes.<br/>Remove contaminated clothing and shoes.<br/>Flush affected areas with plenty of water.<br/>IF IN EYES, hold eyelids open and flush with plenty of water.</p> |  |  |               |           |                      |
| <b>Water Pollution</b>   | <p>Effect of low concentrations on aquatic life is unknown.<br/>Fouling to shoreline.<br/>May be dangerous if it enters water intakes.<br/>Notify local health and wildlife officials.<br/>Notify operators of nearby water intakes.</p>   |  |  |               |           |                      |

### 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<sub>3</sub>COOCH<sub>2</sub>CH(CH<sub>3</sub>)<sub>2</sub>  
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 AEGL:** 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

### 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction  
5.2 **Reactivity with Common Materials:** Softens and dissolves many plastics  
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:** 1200 ppm/24 hr/brine shrimp/TL<sub>m</sub>  
6.2 **Waterfowl Toxicity:** Currently not available  
6.3 **Biological Oxygen Demand (BOD):** 47% of theoretical in 5 days, freshwater, acclimated seed  
6.4 **Food Chain Concentration Potential:** None  
6.5 **GESAMP Hazard Profile:**  
Bioaccumulation: 0  
Damage to living resources: 2  
Human Oral hazard: 1  
Human Contact hazard: 1  
Reduction of amenities: X

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 95-99+%  
7.2 **Storage Temperature:** Ambient  
7.3 **Inert Atmosphere:** No requirement  
7.4 **Venting:** Open (flame arrester)  
7.5 **IMO Pollution Category:** C  
7.6 **Ship Type:** 3  
7.7 **Barge Hull Type:** Currently not available

### 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:**
- | 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 FWPCA 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<sup>2</sup>  
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<sup>5</sup> J/kg  
9.13 **Heat of Combustion:** (est.) -13,000 Btu/lb = -7220 cal/g = -302 X 10<sup>3</sup> 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<br>SATURATED LIQUID DENSITY |                       | 9.21<br>LIQUID HEAT CAPACITY |                                     | 9.22<br>LIQUID THERMAL CONDUCTIVITY |   | 9.23<br>LIQUID VISCOSITY   |            |
|----------------------------------|-----------------------|------------------------------|-------------------------------------|-------------------------------------|---|----------------------------|------------|
| Temperature<br>(degrees F)       | Pounds per cubic foot | Temperature<br>(degrees F)   | British thermal unit per<br>pound-F | Temperature<br>(degrees F)          | British thermal unit inch<br>per hour-square foot-F | Temperature<br>(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<br>SOLUBILITY IN WATER |                                   | 9.25<br>SATURATED VAPOR PRESSURE |                        | 9.26<br>SATURATED VAPOR DENSITY |                       | 9.27<br>IDEAL GAS HEAT CAPACITY |                                     |
|-----------------------------|-----------------------------------|----------------------------------|------------------------|---------------------------------|-----------------------|---------------------------------|-------------------------------------|
| Temperature<br>(degrees F)  | Pounds per 100 pounds<br>of water | Temperature<br>(degrees F)       | Pounds per square inch | Temperature<br>(degrees F)      | Pounds per cubic foot | Temperature<br>(degrees F)      | British thermal unit per<br>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                               |