VINYL ACETATE

VAM

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
VAM
Vinyl A monomer
Vyac

Watery liquid | Colorless | Pleasant fruity odor

Floats on water. Flammable, irritating vapor is produced.

Evacuate.
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.
Protect water intakes.

Fire

FLAMMABLE.
Containers may explode in fire.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Combat fires from safe distance or protected location.
Extinguish with dry chemical, foam, carbon dioxide.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness or difficult breathing.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed or if spilled on skin.
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.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
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

Dilute and disperse
Stop discharge
Collection Systems: Skim
Clean shore line
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 13; Vinyl acetate
2.2 Formula: $CH_3COOCH{=}CH_2$
2.3 IMO/UN Designation: 3.2/1301
2.4 DOT ID No.: 1301
2.5 CAS Registry No.: 108-05-4
2.6 NAERG Guide No.: 129P
2.7 Standard Industrial Trade Classification: 51372

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Approved canister or air-supplied mask; goggles or face shield; rubber or plastic gloves.
3.2 Symptoms Following Exposure: High vapor concentrations cause narcosis. Liquid irritates eyes and may irritate skin.
3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; give artificial respiration if required. EYES: flush with water for at least 15 min.
3.4 TLV-TWA: 10 ppm
3.5 TLV-STEL: 15 ppm
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 2; LD_{50} = 0.5 to 5 g/kg (rat)
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: 0.12 ppm
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: 23°F O.C. 18°F C.C.
4.2 Flammable Limits in Air: 2.6%-13.4%
4.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires; alcohol foam for large fires.
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: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. May polymerize when heated in a fire and rupture container.
4.7 Auto Ignition Temperature: 756°F
4.8 Electrical Hazards: Class I, Group D
4.9 Burning Rate: 3.8 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 21.4 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 7.0 (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: No reaction
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Can occur when in contact with peroxides and strong acids; but only under extreme conditions.
5.6 Inhibitor of Polymerization: 3-5 ppm or 14-17 ppm hydroquinone. Shipments usually also contain 200 ppm of diphenylamine.

6. WATER POLLUTION

6.1 Aquatic Toxicity:
18 ppm/96 hr/bluegill/TL_m/fresh water
>100 ppm/48 hr/flounder/LC_{50}/salt water
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): 62% 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: O
Reduction of amenities: O

7. SHIPPING INFORMATION

7.1 Grades of Purity: Grade A (Diphenylamine-inhibited): 99.8% Grade H (Hydroquinone-inhibited): 99.8%
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Pressure-vacuum
7.5 IMO Pollution Category: C
7.6 Ship Type: 3
7.7 Barge Hull Type: 3

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).....	2
Flammability (Red).....	3
Instability (Yellow).....	2

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: Yes

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 86.09
9.3 Boiling Point at 1 atm: 163.2°F = 72.9°C = 346.1°K
9.4 Freezing Point: –135.0°F = –92.8°C = 180.4°K
9.5 Critical Temperature: 485.6°F = 252°C = 525.2°K
9.6 Critical Pressure: 617 atm = 42 psia = 4.25 MN/m^2
9.7 Specific Gravity: 0.934 at 20°C (liquid)
9.8 Liquid Surface Tension: 23.95 dynes/cm = 0.02395 N/m at 20°C
9.9 Liquid Water Interfacial Tension: (est.) 30 dynes/cm = 0.03 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: Not pertinent
9.11 Ratio of Specific Heats of Vapor (Gas): 1.103
9.12 Latent Heat of Vaporization: 163 Btu/lb = 90.6 cal/g = 3.79 X 10^5 J/kg
9.13 Heat of Combustion: –9754 Btu/lb = –5419 cal/g = –226.9 X 10^5 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: –439 Btu/lb = –244 cal/g = –10.2 X 10^5 J/kg
9.17 Heat of Fusion: Currently not available
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: 3.7 psia

NOTES

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9.20 SATURATED LIQUID DENSITY

Temperature (degrees F)	Pounds per cubic foot
35	60.020
40	59.760
45	59.500
50	59.240
55	58.980
60	58.720
65	58.460
70	58.200
75	57.940
80	57.680
85	57.420
90	57.160
95	56.900
100	56.640

9.21 LIQUID HEAT CAPACITY

Temperature (degrees F)	British thermal unit per pound-F
0	0.401
5	0.402
10	0.404
15	0.405
20	0.407
25	0.408
30	0.409
35	0.411
40	0.412
45	0.414
50	0.415
55	0.416
60	0.418
65	0.419
70	0.420
75	0.422
80	0.423
85	0.425
90	0.426
95	0.427
100	0.429
105	0.430
110	0.432
115	0.433
120	0.434

9.22 LIQUID THERMAL CONDUCTIVITY

Temperature (degrees F)	British thermal unit inch per hour-square foot-F
0	1.120
10	1.105
20	1.090
30	1.075
40	1.061
50	1.046
60	1.031
70	1.016
80	1.001
90	0.987
100	0.972
110	0.957
120	0.942
130	0.927
140	0.913
150	0.898
160	0.883

9.23 LIQUID VISCOSITY

Temperature (degrees F)	Centipoise
40	0.518
50	0.484
60	0.454
70	0.427
80	0.402
90	0.380
100	0.360
110	0.341
120	0.324
130	0.308
140	0.294
150	0.280
160	0.268

9.24 SOLUBILITY IN WATER

Temperature (degrees F)	Pounds per 100 pounds of water
68	2.300

9.25 SATURATED VAPOR PRESSURE

Temperature (degrees F)	Pounds per square inch
0	0.197
10	0.286
20	0.408
30	0.571
40	0.786
50	1.064
60	1.421
70	1.871
80	2.433
90	3.128
100	3.977
110	5.005
120	6.239
130	7.706
140	9.439
150	11.470
160	13.830
170	16.560
180	19.700
190	23.290
200	27.360
210	31.970
220	37.150
230	42.950

9.26 SATURATED VAPOR DENSITY

Temperature (degrees F)	Pounds per cubic foot
0	0.00344
10	0.00489
20	0.00682
30	0.00935
40	0.01261
50	0.01674
60	0.02192
70	0.02833
80	0.03616
90	0.04564
100	0.05699
110	0.07046
120	0.08631
130	0.10480
140	0.12620
150	0.15090
160	0.17900
170	0.21100
180	0.24700
190	0.28750
200	0.33270
210	0.38290
220	0.43840
230	0.49950

9.27 IDEAL GAS HEAT CAPACITY

Temperature (degrees F)	British thermal unit per pound-F
0	0.223
25	0.232
50	0.241
75	0.249
100	0.258
125	0.266
150	0.275
175	0.283
200	0.291
225	0.299
250	0.307
275	0.314
300	0.322
325	0.330
350	0.337
375	0.344
400	0.351
425	0.358
450	0.365
475	0.372
500	0.379
525	0.385
550	0.392
575	0.398
600	0.404