

Description:

Vista vinyl chloride monomer (VCM) is a high purity, clear, colorless, sweet smelling gas at ambient temperature and pressures. It polymerizes readily in the presence of air, sunlight, oxidizing agents, and free-radical catalysts, to form a hard, white resin-polyvinyl chloride (PVC).

Applications:

Vista vinyl chloride monomer is used in the manufacture of polyvinyl chloride for use in pipe and pipe fittings, siding, window profiles, and food grade packaging and bottles. It is also compatible with a variety of vinyl monomers such as vinyl acetate, ethylene, propylene, vinylidene chloride, and acrylates in the manufacture of copolymers. Vista vinyl chloride monomer is suitable for use as an intermediate in the manufacture of 1,1,1-trichloroethane for use as a solvent or degreaser.

<u>Properties</u>	<u>Specification</u>	<u>Typical</u>
Vinyl Chloride, Wt. % *	99.98 min	99.98
Water, ppm	100 max	<50
Methyl Chloride, ppm	70 max	<50
Acetylene, ppm	2 max	<1
1,3-Butadiene, ppm	12 max	<10
Total C ₄ Unsaturates	40 max	<20
Acetaldehyde, ppm	1.0 max	<0.5
Non-Volatiles, ppm	25 max	nil
Iron (non-filterable), ppm	0.15 max	<0.1
Acidity (as HCl), ppm	1 max	nil
Oxygen in Vapor Space, ppm, vol.		
before loading	1,000 max	<350
after loading	500 max	-
Freezing Point, °C		-153.7
Boiling Point, °C		-13.8
Flash Point (COC), °C		-78
Specific Gravity, Liquid (20°C/20°C)		0.9121
Density, (20°C), Lb./Gal.		7.6
Solubility (H ₂ O in VCM), Wt. %		0.11
Explosive Limits (Volume in Air), Vol. %		
Upper Limit		22.0
Lower Limit		4.0

*excludes water, oxygen and non-volatiles.

NOTE: For export shipment up to 5 ppm of hydroquinone inhibitor will be added.

Safety and Handling:

When inhaled at high concentrations, vinyl chloride monomer acts as an anesthetic. Prolonged exposure to excessive amounts of VCM may cause cancer. Vinyl chloride is a highly flammable gas and can easily ignite at most normal atmospheric conditions. The handling, use and exposure to VCM in the workplace is strictly regulated by OSHA. Refer to 29 CFR, Part 1910.1017 for specific requirements.

THE DATA CONTAINED HEREIN ARE FOR GENERAL INFORMATIONAL PURPOSES ONLY. PLEASE REFER TO THE VISTA CHEMICAL COMPANY MATERIAL SAFETY DATA SHEET FOR SPECIFIC, COMPLETE INFORMATION REGARDING THIS PRODUCT.

Storage and Transfer:

Store Vista vinyl chloride in steel tanks, either under refrigeration or under pressure at atmospheric temperatures. Do not use vessels or fittings made of copper or aluminum or their alloys. Blanket storage tanks with inert gas, and never allow air to enter the tanks. In the presence of water, VCM accelerates the corrosion of iron or steel.

Availability:

Uninhibited or inhibited grades of Vista vinyl chloride are shipped as a liquid in pressurized tank cars from Westlake, Louisiana. Product can be made available in bulk vessels, for barge or vessel liftings. Contact Vista Chemical Company for information regarding water shipment.

Vista is a trademark of Vista Chemical Company.

The above data are based on tests and experience which Vista Chemical Company believes reliable, and are supplied for informational purposes only. Vista Chemical Company and its subsidiary, Vista Polymers Inc., disclaim any liability for damage or injury which results from the use of the above data and nothing contained therein shall constitute a guarantee, warranty or representation (including freedom from patent liability) by Vista Chemical Company or Vista Polymers Inc. with respect to the data, the product described or their use for any specific purpose, even if that purpose is known to Vista Chemical Company or Vista Polymers Inc. For detailed information regarding these products, please refer to the respective Vista Chemical Company or Vista Polymers Inc. Material Safety Data Sheet.

VISTA

VVV 000002210

Vista Chemical Company

VCM

Vinyl Chloride

Monomer

Headquarters

Vista Chemical Company
15990 N. Barker's Landing Rd.
Post Office Box 19029
Houston, Texas 77224
Phone (713) 531-3200
Telex 794557, TWX 910-881-7329
FAX (713) 531-3236

Domestic Sales Offices

Eastern Region
Park 80 Plaza East
Saddle Brook, New Jersey 07662
Phone (201) 845-3800
FAX (201) 845-6807

Midwestern Region
2222 Camden Court, Suite 120
Oak Brook, Illinois 60521
Phone (312) 655-7070
FAX (312) 655-7086

Southwestern Region
15990 N. Barker's Landing Rd.
Post Office Box 19029
Houston, Texas 77224
Phone (713) 531-3200
Telex 794557, TWX 910-881-7329
FAX (713) 531-3236

Western Region
Smoketree Plaza
1450 N. Tustin, Suite 100
Santa Ana, California 92701
Phone (714) 541-8449
FAX (714) 541-0567

International Sales Offices

Vista Chemical Latin America S.A.
15990 N. Barker's Landing Rd.
Post Office Box 19029
Houston, Texas 77224
Phone (713) 531-3200, Telex 794557
FAX (713) 531-3236

Vista Chemical Europe
Hilton Tower
Boulevard de Waterloo, #39
B1000 Brussels, Belgium
Phone (32-2) 513-7490
Telex 24727
Cable: VISTACHEM, Brussels

Vista Chemical Far East, Inc.
Post Office Box 110
Kasumigaseki Building, 25th floor
Tokyo, Japan 100
Phone (81-3) 593-0611, Telex 29368
Cable: VISTACHEM, Tokyo
FAX 011-813-593-0615

VISTA

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DATA GUIDE

BULLETIN HE-159

CONCENTRATION, VOLUME %

TEMPERATURE, °F

TEMPERATURE, °C

CORRESPONDING PARTIAL PRESSURE, mm Hg

MP
-245°F
-154°C

BP, 7°F
-14°C

Flashpoint
-108°F
-78°C

T_{st}

UPPER FLAMMABLE LIMIT
33% (251 mm)

LOWER FLAMMABLE LIMIT
3.6% (27 mm)

C_{st}
7.73% (58.7 mm)

APPROXIMATE TEMPERATURE RANGE WHERE FLAMMABLE VAPORS EXIST OVER LIQUID AT EQUILIBRIUM IN DRY AIR AT ONE ATMOSPHERE

AIT
892°F
472°C

FLAMMABILITY DATA GUIDE

VVY 000002212

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ORIGIN OF DATA GUIDE

By Thomas H. Pratt

Mixtures of combustible vapors and air can burn when ignited; however, homogeneous combustible vapor-air mixtures are flammable only within a limited range of compositions. In a hazards assessment of an industrial process, it becomes necessary to determine the specific situations where flammable compositions can exist at each process stage.

There is a large body of data (see references) to aid the engineer in identifying flammable conditions: i.e., flammable limits, flashpoints, autoignition temperatures, and vapor pressures of combustibles. However, some of the relationships that exist among these data are not readily apparent from the literature tables. A graphic representation is needed as a starting point to identify fire and explosion hazards.

One of the better graphic formats is a plot of combustible concentration vs temperature, such as shown in Figure 1. This is a general representation of flammability behavior of combustible liquids; the reader is referred to the literature for discussions of its interpretation (see first reference).

Seldom are the data for any specific combustible liquid complete enough to make an entire plot. For this reason, only that portion of Figure 1 for which data are readily available is incorporated into the Data Guide graph on the front of the bulletin, namely, the vapor pressure/temperature data at one atmosphere in dry air over the region of flammability. Melting points and autoignition temperatures are also included.

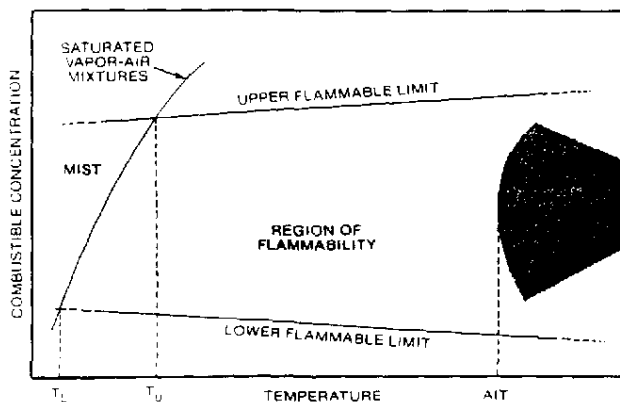


Figure 1—FLAMMABILITY LIMITS OF A COMBUSTIBLE VAPOR AS A FUNCTION OF TEMPERATURE—IN AIR AT A CONSTANT INITIAL PRESSURE.

GLOSSARY

Limits of flammability

Homogeneous, combustible vapor-air mixtures can propagate combustion waves only within a limited range of compositions. Compositions in this range are said to be within the limits of flammability.

Lower flammable limit

The composition of a vapor-air mixture that contains the minimum amount of vapor in air to form a combustible mixture—expressed as a volume percent of vapor in air in the Data Guide.

Upper flammable limit

The composition of a vapor-air mixture that contains the maximum amount of vapor in air to form a combustible mixture—expressed as a volume percent of vapor in air in the Data Guide.

Flashpoint

The minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. A standard method of test for flashpoint is the Tag closed cup, ASTM D 56-70. When available, the value for this method is used in the Data Guide.

Autoignition Temperature (AIT)

The minimum temperature at which a material begins to self-heat at a high enough rate to result in combustion—reported in the Data Guide as the temperature in air at one atmosphere.

C_{st} Stoichiometric composition of combustible vapor in air—expressed as a volume percent.

T_{st} Equilibrium temperature at which C_{st} exists over liquid in dry air at one atmosphere.

T_L Equilibrium temperature at which the lower flammable limit composition exists over liquid in dry air at one atmosphere (theoretical flashpoint).

T_U Equilibrium temperature at which the upper flammable limit composition exists over liquid in dry air at one atmosphere.

MP Melting point (freezing point).

BP Boiling point.

REFERENCES

M. G. Zabetakis, "Flammability Characteristics of Combustible Gases and Vapors," U.S. Department of the Interior, Bureau of Mines, **Bulletin 627**, 1965.

H. F. Coward, G. W. Jones, "Limits of Flammability of Gases and Vapors," U.S. Department of the Interior, Bureau of Mines, **Bulletin 503**, 1952.

C. J. Hilado, S. W. Clark, "Autoignition Temperatures of Organic Compounds," *Chemical Engineering*, September 4, 1972, pp. 75-80.

Chemical Safety Data Sheets, Manufacturing Chemists' Association, Inc.

L. A. Lovachev, et al., "Flammability Limits: An Invited Review," *Combustion and Flame*, **20**, 259-289 (1973).

B. Lewis, G. von Elbe, "Combustion, Flames and Explosions of Gases," Academic Press, Inc., 1951.



Hercules Incorporated
P.O. Box 210
Cumberland, MD 21502
(304) 726-4500

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Interoffice
Communication

VISTA

The attached VCM Technical Data Sheet is now available for field use, but no direct mailing is planned.

Additional copies may be obtained by following the procedure for ordering literature from The Premier Company in Section 8 of the Sales Manual.

Many thanks to all of those people who helped revise and update this.


R. M. Saad

/naf
Attachment

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