

mmable Liquid

CH. The dimer
to a solution of
in hydrochloric

sp. gr. 0.6867

f neoprene and

Unstable liquid.
or the polymer,

l derivative by
tion of alcohols
l ethyl ether,

°C; sp. gr. 1.51.
ir. A suspected

ic fibers.
er; BVE)

C; b.p. 94.1°C;
97; flash point
7.45 lb (20°C).
in alcohol and

h n-butyl alco-

k cars.
isk.

id, n.o.s. (Rail,

20/20°C); b.p.
tly soluble in
pen cup). Low

isk.

d, n.o.s. (Rail,

toxicity.
azole.
and insulating
in dielectric

vinyl chloride (VC; chloroethene; chloroethylene)
 $\text{CH}_2=\text{CHCl}$. The most important vinyl monomer.
19th highest-volume chemical produced in U.S.
(1979).

Properties: Compressed gas; easily liquefied; ethereal
odor. Usually handled as liquid; phenol is added as a
polymerization inhibitor. Sp. gr. 0.9121 (liquid, at
20/20°C); b.p. -13.9°C; f.p. -159.7°C; vapor pres-
sure 2300 mm (20°C); flash point -108°F (-77°C).
Autoignition temp. 882°F (472°C). Slightly soluble
in water; soluble in alcohol and ether. Explosive
limits in air 4 to 22% by volume.

Derivation: (a) Dehydrochlorination of ethylene di-
chloride; (b) reaction of acetylene and hydrochloric
acid, either as liquids or gases.

Grades: Technical; pure, 99.9%.

Containers: Cylinders; tank cars; ocean tankers.

Hazard: Highly flammable; severe explosion risk at
30,000 ppm. Tolerance for workroom exposure
established by OSHA is 1 ppm (average over an 8-hr
period); Exposure times up to 15 minutes are
permissible up to 5 ppm. Respirators must be used
in cases where this concentration is exceeded. Use in
aerosol sprays prohibited. **A known carcinogen.**

Uses: Polyvinyl chloride and copolymers; organic
synthesis; adhesives for plastics.

Shipping regulations: (inhibited) (Rail, Air) Flam-
mable Gas label. Not acceptable passenger; (uninhib-
ited) (Air) Not acceptable.

vinyl 2-chloroethyl ether $\text{CH}_2=\text{CHOCH}_2\text{CH}_2\text{Cl}$.

Properties: Liquid; sp. gr. 1.0498 (20°C); b.p. 109.1°C;
f.p. -69.7°C; very slightly soluble in water; flash
point (open cup) 80°F (26.6°C).

Hazard: Flammable, dangerous fire risk.

Shipping regulations: Flammable liquid, n.o.s. (Rail,
Air) Flammable Liquid label.

vinyl compound. A compound having the vinyl
grouping ($\text{CH}_2=\text{CH}-$), specifically vinyl chloride,
vinyl acetate and similar esters, but also referring
more generally to compounds such as styrene
 $\text{C}_6\text{H}_5\text{CH}=\text{CH}_2$, methyl methacrylate
 $\text{CH}_2=\text{C}(\text{CH}_3)\text{COOCH}_3$
and acrylonitrile $\text{CH}_2=\text{CHCN}$. The vinyl compounds
are highly reactive, polymerize easily, and are the
basis of a number of important plastics.

vinyl cyanide. See acrylonitrile.

vinylcyclohexene (1-vinylcyclohexene-3; 4-vinylcyclo-
hexene-1; cyclohexenylethylene)

$\text{CH}_2=\text{CHCHCH}_2\text{CH}=\text{CHCH}_2\text{CH}_2$. A butadiene
dimer.

Properties: Liquid; sp. gr. 0.8303 (20/4°C); f.p.
-108.9°C; b.p. 128°C; refractive index 1.464
(n 20/D); flash point 70°F (21.2°C) (TOC). Auto-
ignition temp. 517°F (269°C). Temperatures above
80°F (26.6°C) and prolonged exposure to oxygen-
containing gases should be avoided as these condi-
tions lead to discoloration and gum formation.

Grades: Technical, 95%; pure, 99%; research.

Containers: 1-, 5-gal cans; 55-gal drums; tank trucks;
tank cars.

Hazard: Flammable, dangerous fire risk. May be
narcotic in high concentrations.

Uses: Polymers; organic synthesis.

Shipping regulations: Flammable liquid, n.o.s. (Rail,
Air) Flammable Liquid label.

vinylcyclohexene dioxide $\text{CH}_2\text{CHOC}_6\text{H}_9\text{O}$. Also
called vinylcyclohexane dioxide.

Properties: Colorless liquid; sp. gr. 1.098 (20/20°C);
b.p. 227°C; refractive index 1.4782 (n 20/D); viscos-
ity 7.77 cp (20°C); flash point 230°F (110°C).
Combustible.

Hazard: Strong irritant to skin and tissue. Toxic by
ingestion and skin absorption. Tolerance, 10 ppm in
air.

Uses: Polymers; organic synthesis.

vinylcyclohexene monoxide $\text{CH}_2=\text{CHC}_6\text{H}_9\text{O}$. Also
called vinylcyclohexane monoxide.

Properties: Liquid; sp. gr. 0.9598 (20/20°C); b.p.
169°C; f.p. -100°C; flash point 136°F (57.8°C);
viscosity 1.69 cp (20°C). Very slightly soluble in
water. Combustible.

Hazard: Moderately toxic and irritant. Moderate fire
risk.

Uses: Polymers; organic synthesis.

vinyl ether (divinyl ether; divinyl oxide)

$\text{CH}_2=\text{CHOCH}=\text{CH}_2$.

Properties: Colorless liquid with characteristic odor;
sp. gr. 0.769; b.p. 39°C; refractive index (20/D)
1.3989. Slightly soluble in water; miscible with
alcohol, acetone, chloroform, and ether. Must be
protected from light. Flash point below -22°F
(-30°C); autoignition temp. 680°F (360°C).

Derivation: Treatment of dichloroethyl ether with
alkali.

Grade: N.F. (contains 96-97% vinyl ether, remainder
dehydrated alcohol).

Containers: 50- and 75-cc bottles.

Hazard: Highly flammable; severe fire and explosion
risk. Explosive limits in air 1.7 to 27%. Highly toxic
by inhalation; overexposure may be fatal.

Uses: Copolymer with 3 to 5% polyvinyl chloride for
plastic products such as clear plastic bottles; medicine
(anesthetic, for brief operations only).

Shipping regulations: (Rail) Flammable liquid, n.o.s.,
Flammable Liquid label. (Air) Flammable Liquid
label. Legal label name (Air), divinyl ether.

vinyl beta-ethoxyethyl sulfide

$\text{CH}_2=\text{CHSCH}_2\text{CH}_2\text{OC}_2\text{H}_5$.

Properties: Colorless liquid. Pungent, camphor-like
odor. Sp. gr. 0.9532 (15°C); b.p. 65°C (8 mm).

Use: Organic synthesis.

vinylethylene. See butadiene.

vinyl ethyl ether (ethyl vinyl ether; EVE)

$\text{CH}_2=\text{CHOC}_2\text{H}_5$.

Properties: Colorless liquid. Extremely reactive; can

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