Rijksinstituut voor Volksgezondheid en Milieu
Ministerie van Volksgezondheid, Welzijn en Sport

Stofdocument deel A

CAS-nr: 140-88-5

Ethylacrylaat

CH_2=CHCOOC_2H_5 **VN-nr: 1917**

GEVI: 339

Synoniemen: acrylzuur ethylester, ethyl-2-propenoaat (Engels: Ethyl acrylate)

Interventiewaarden		10 min.	30 min.	1 uur	2 uur	4 uur	8 uur
Voorlichtingsrichtwaarden	VRW (mg/m^3)	320	140	81	47	28	16
Alarmeringsgrenswaarden	AGW (mg/m^3)	960	410	240	140	84	49
Levensbedreigende waarden	LBW (mg/m^3)	3900	1700	990	500	290	170

Datum vaststelling: 13-05-2009

1 mg/m^3 = 0,240 ppm; 1 ppm = 4,16 mg/m^3

Explosiegrens: LEL = 1,7 vol% ≈ 71.000 mg/m^3

Geur: Aardachtige, bijtende, plastic-achtige geur

LOA: 0,16 mg/m^3

Fysisch-chemische eigenschappen

Uiterlijk: kleurloze vloeistof

Brand: zeer brandgevaarlijk

Relatieve dichtheid van verzadigd damp-lucht mengsel: 1,1

Molecuulmassa:	100,1 g/mol
Zuurgraad:	Geen data
LogKow:	1,4
Wateroplosbaarheid:	2 g/100 ml (matig)
Verzadigde dampdruk:	39 mbar

Overige informatie

Publieke grenswaarde:
21 mg/m^3 (8 uur)
MAK: 21 mg/m^3

TLV-TWA: 21 mg/m^3

Toxicologische eigenschappen

Effecten bij inhalatoire blootstelling

Onder VRW:	mogelijk lichte irritatie
VRW → AGW:	oog-, neus- en huidirritatie.
AGW → LBW:	luchtwegirritatie, benauwdheid, longoedeem, duizeligheid, verminderde reflexen, lever- en nierschade
Boven LBW:	ademnood, convulsies, cardiovasculaire collaps, sterfte

Toxiciteit bij eenmalige, inhalatoire blootstelling

- Ethylmethacrylaat werkt irriterend op de ogen, huid en bovenste en onderste luchtwegen.
- Ethylmethacrylaat heeft effecten op het centrale zenuwstelse.
- Ethylmethacrylaat kan bij hoge concentraties schade veroorzaken aan lever en nieren.
- De stof is sensibiliserend. Na sensibilisatie kan de stof luchtwegallergie veroorzaken na inhalatie of huidallergie bij dermaal contact! Kruisgevoeligheid met andere monoacrylaten is mogelijk!

Effecten bij blootstelling aan vloeistof

Huidcontact: bijtend, roodheid en pijn, blaren

Oogcontact: bijtend, roodheid en pijn, slecht zien

Carcinogeniteit

IARC classificatie: 2B (orale blootstelling)
CRP: niet afgeleid

Beknopte medische informatie

Ontsmetting damp

algemeen: frisse lucht, rust, halfzittende houding en direct spoedeisende medische hulp inzetten.

Ontsmetting vloeistof

huid: verontreinigde kleding uittrekken, minimaal 20 min. spoelen met veel water of douchen en arts raadplegen.

ogen: minimaal 15 min. spoelen met water (evt. contactlenzen verwijderen), dan naar oogarts brengen, blijven spoelen tijdens vervoer.

inslikken: mond laten spoelen (uitspugen!), GEEN braken opwekken en direct spoedeisende medische hulp inzetten.

***Specifieke behandeling en materialen**: geen.*

Neem contact op met het NVIC (tel: +31 (0)30 –274 8888) voor informatie met betrekking tot medisch handelen.

Stofdocument deel B

CAS-nr: 140-88-5 **Ethyl acrylate** **CH_2=CHCOOC_2H_5** **UN-nr:1917**

Basis for the Dutch Intervention Values

VRW: Same point of departure as for AEGL values but difference in time scaling , 2-hr value added

AGW: Same point of departure as for AEGL values but difference in time scaling, 2-hr value added

LBW: AEGL values were adopted, 2-hr value added

Date: 13-05-2009 AEGL document: Interim, 2007

Dutch Intervention Values (mg/m^3)

	10 min	30 min	1 h	2 h	4 h	8 h	End point
VRW	320	140	81	47	28	16	Reversible lesions in the olfactory epithelium in rats
AGW	960	410	240	140	84	49	Reversible lesions in the olfactory epithelium in monkeys
LBW	3900	1700	990	500	290	170	$BCML_{05}$ for lethality in the rat

Derivation of the Dutch Intervention Values

VRW: Limited data were available upon which to base VRW values. A concentration of 25 ppm (104 mg/m^3) resulted in reversible lesions of the olfactory epithelium in rats after 3 hours. This same concentration did not result in any effects in monkeys following repeated exposures, but slight irritation was reported for dogs at this concentration. Therefore, 25 ppm (104 mg/m^3) was chosen as a probable threshold for VRW effects. A total uncertainty factor of 3 was used including a 1 for interspecies extrapolation and 3 for intraspecies extrapolation. Use of greater uncertainty factors was not necessary because the lesion is reversible, the mechanism of irritation is not expected to differ between individuals, and similar lesions were found in monkeys, guinea pigs, rabbits, and rats. Data were scaled across time using $C^n \times t = k$, using n=1.3 (see derivation LBW values). In contrast, AEGL values were not scaled across time, however the data indicate that the severity of the effect increased with exposure time, hence time scaling was considered appropriate.

AGW: Data in humans relevant to derivation of AGW values were not found. No serious, long lasting health effects were reported. Prolonged exposure (not defined) to 50-75 ppm (210-310 mg/m^3) has been reported to produce drowsiness, headache, and nausea; no further details could be found. Exposure of monkeys to 75 ppm (310 mg/m^3) for 3 hours, which resulted in damage to 15% of the olfactory epithelium, was used to derive AGW values. A total uncertainty factor of 3 was used including a factor 1 for interspecies extrapolation and a factor 3 for intraspecies extrapolation. Use of greater uncertainty factors was not necessary because the lesion is reversible, the mechanism of irritation is not expected to differ between individuals, and similar lesions were found in monkeys, guinea pigs, rabbits, and rats. Data were scaled across time using $C^n \times t = k$. In contrast to the AEGL values where default values for n were used, the substance specific n-value of 1.3 was used for time scaling (see derivation LBW values).The AGW values are less than those reported to produce drowsiness, headache, and nausea in humans.

LBW: Animal data relevant to derivation of LBW values are limited to 1- and 4-hour LC_{50} studies in rats. These were well conducted studies with analytically determined exposure concentrations. Clinical signs of irritation were observed in animals during exposure and death was attributed to cardiopulmonary collapse. Calculated LC_{50} values were 6493 ppm (27035 mg/m^3) for 1 hour and 2180 ppm (9077mg/m^3) for 4 hours. From these data, 1- and 4- hour $BMCL_{05}$ values were calculated by a log-probit analysis using US EPA Benchmark Dose Software version. The resulting 1-hour $BMCL_{05}$ of 2387 ppm (9939 mg/m^3) was used to derive the 10- minute, 30-minute, and 1-hour LBW values. The resulting 4-hour $BMCL_{05}$ of 706 ppm (2940 mg/m^3) was used to derive the 2-, 4-, and 8-hour LBW values. The 4-hour was used to derive the 2-hour value because it results in the lowest value. Time scaling was performed using the equation $C^n \times t = k$, with n=1.3 (calculated by combining the 1- and 4- hour LC_{50} data sets in 3-dimensional probit analysis). A total uncertainty factor of 10 was used including a factor 3 for interspecies extrapolation and a factor 3 for intraspecies

extrapolation. Use of greater uncertainty factors was not necessary because the mechanism of irritation is not expected to differ between individuals and similar lesions were found in monkeys, guinea pigs, rabbits, and rats.

Additional toxicological information (including relevant results of a general literature search, if any)

Irritant to the mucus membranes. The target within the respiratory tract was shown to be the olfactory epithelium lining the dorsal meatus in both monkeys and rats. Both the severity and extent of the lesions were concentration and time dependent. Metabolism and subsequent removal of the chemical by carboxylesterase in the upper respiratory tract reduces the toxicity by reducing systemic uptake and by preventing the chemical from getting to the lower respiratory tract. At lethal concentrations, death was attributed to cardiopulmonary collapse, and was accompanied by cloudy swelling and/or congestion of other visceral organs.

No reports of developmental or reproductive toxicity in humans were found. Developmental toxicity in rat studies show that the fetus may be affected at maternally toxic concentrations.

H302: Harmful if swallowed; H312: Harmful in contact with skin; H315: Causes skin irritation; H317: May cause an allergic skin reaction; H319: Causes serious eye irritation; H332: Harmful if inhaled; H335: May cause respiratory irritation.

Carcinogenicity and derivation of the CRP value

IARC classification: 2B (possibly carcinogenic to humans)

No carcinogenic risk potency (CRP) was derived

Route specific tumors have been found in the forestomach following oral administration, but none were found following inhalation exposure.

Odour and derivation of the LOA value

Odour: pungent, disagreeable, acid

Odour thresholds of 0.00024 ppm (0.0010 mg/m^3) for detection and 0.00037 ppm (0.00154 mg/m^3) for recognition were reported [AEGL (2007); U.S. EPA (1992)].

LOA = 11.8 * OT_{50} * 1.33 = 0.16 mg/m^3

(The concentration Level leading to distinct Odour Awareness (I=3) is calculated using the formula: I = 2.33 * log (C/OT_{50}) + 0.5. A correction factor of 1.33 is applied to this value)

The LOA is far below the VRW values

Other standards and guidelines (1h values in mg/m^3, unless otherwise indicated)

VRW level 81	*AEGL-1* 35	*ERPG-1* 0.04		*IDLH*: 1250 (30 minutes)
AGW level 240	*AEGL-2* 150	*ERPG-2* 120		
LBW level 990	*AEGL-3* 1000	*ERPG-3* 1200		