

# PROPYL ALCOHOL

**CAS number:** 71-23-8

**Synonyms:** Ethyl carbinol, propan-1-ol, 1-propanol, n-propyl alcohol

**Chemical formula:** C<sub>3</sub>H<sub>8</sub>O

## Workplace exposure standard (retained)

**TWA:** 200 ppm (492 mg/m<sup>3</sup>)

**STEL:** 250 ppm (614 mg/m<sup>3</sup>)

**Peak limitation:** —

**Notations:** —

**IDLH:** —

**Sampling and analysis:** The recommended value is quantifiable through available sampling and analysis techniques.

## Recommendation and basis for workplace exposure standard

A TWA of 200 ppm (492 mg/m<sup>3</sup>) is recommended to protect for irritant effects and potential intoxication in exposed workers.

A STEL of 250 ppm (614 mg/m<sup>3</sup>) is recommended to protect for adverse effects from acute exposures.

## Discussion and conclusions

Propyl alcohol is used as carrier and extraction solvent for natural products such as flavourings, vegetable oils, resins, waxes and gum. It is used as a cosmetic ingredient.

Critical effects of exposure are irritation and possible intoxication.

Toxicological data are limited in humans and animals. ACGIH (2018) reported propyl alcohol to have similar biological effects as 2-propanol but considered it more toxic. An odour threshold in the range of 10 to 100 ppm and an irritation threshold for the eye and nose in the range of 4,000 to 16,000 ppm is reported in a study in humans. In mice, deep narcosis occurred in 60 minutes when exposed at 24,500 ppm and in 240 min at 4,100 ppm (ACGIH, 2018). Nasal, respiratory and eye irritation, hypoactivity, as well as reduced pain reflex are observed in rats exposed at 5,185 ppm for 14 days. Central nervous system (CNS) depression is observed at 9,741 ppm with narcosis within two hours of exposure in rats (NICNAS, 2013).

Given the limited available data, the TWA of 200 ppm (492 mg/m<sup>3</sup>) and STEL of 250 ppm (492 mg/m<sup>3</sup>) are recommended to be retained to limit irritant effects and potential intoxication.

## Recommendation for notations

Not classified as a carcinogen according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Not classified as a skin sensitiser or respiratory sensitiser according to the GHS.

A skin notation is no longer recommended based on a lack of dermal exposure data in animals or humans other than irritation.

DRAFT

## APPENDIX

### Primary sources with reports

Source	Year set	Standard
<b>SWA</b>	<b>1991</b>	<b>TWA: 200 ppm (492 mg/m<sup>3</sup>); STEL: 250 ppm (614 mg/m<sup>3</sup>)</b>
Adopted from ACGIH.		
<b>ACGIH</b>	<b>2007</b>	<b>TLV-TWA: 100 ppm (246 mg/m<sup>3</sup>)</b>
TLV-TWA recommended to minimise sensory irritation and narcosis. Summary of data: No specific derivation of TLV-TWA explained; based on analogy to 2-propanol (TLV-TWA of 200 ppm). Human data: <ul style="list-style-type: none"> <li>• Experimental study involving anosmics and normosmic groups; odour threshold in the range of 10–100 ppm; irritation threshold (eye and nose) in the range of 4,000–16,000 ppm</li> <li>• 1 case report of fatality from acute ingestion; no further information.</li> </ul> Animal data: <ul style="list-style-type: none"> <li>• In mice, deep narcosis occurred in 60 min at 24,500 ppm and in 240 min at 4,100 ppm</li> <li>• RD<sub>50</sub> in mice at 4,780 ppm for 5 min</li> <li>• Not irritating to the skin of rabbits</li> <li>• Stated to have many of the same biological effects as 2-propanol but considered more toxic.</li> </ul> Insufficient data to recommend a sensitisation notation, skin notation not warranted. Not classifiable as a human carcinogen.		
<b>DFG</b>	<b>NA</b>	<b>NA</b>
No report.		
<b>SCOEL</b>	<b>NA</b>	<b>NA</b>
No report.		
<b>OARS/AIHA</b>	<b>NA</b>	<b>NA</b>
No report.		
<b>HCOTN</b>	<b>NA</b>	<b>NA</b>
No report.		

### Secondary source reports relied upon

Source	Year	Additional information
NICNAS	✓ 2013	<ul style="list-style-type: none"> <li>• Notable erythema formation occurred in 7/10 human subjects exposed to a closed patch of 0.3 mL for 10 min on forearms</li> <li>• LD<sub>50</sub>: 4,032 mg/kg (rabbits, dermal)</li> <li>• Rats exposed at 5,185, 9,741 and 13,548 ppm (whole body vapour) for 4 h/d for 14 d; nasal, respiratory and eye irritation,</li> </ul>



Source	Year	Additional information
		hypoactivity, as well as reduced pain reflex observed; CNS depression at 9,741 ppm with narcosis within 2 h of exposure
		<ul style="list-style-type: none"> <li>Critical effects to human health are potential serious damage to eyes and intoxication symptoms following inhalation of high vapour concentrations.</li> </ul>

## Carcinogenicity — non-threshold based genotoxic carcinogens

Is the chemical mutagenic?

No

**The chemical is not a non-threshold based genotoxic carcinogen.**

## Notations

Source	Notations
SWA	Skin
HCIS	—
NICNAS	—
EU Annex	NA
ECHA	—
ACGIH	Carcinogenicity – A4
DFG	NA
SCOEL	NA
HCOTN	NA
IARC	NA
US NIOSH	NA

NA = not applicable (a recommendation has not been made by this Agency); — = the Agency has assessed available data for this chemical but has not recommended any notations

## Skin notation assessment

### Calculation

Adverse effects in human case study:	no
Dermal LD <sub>50</sub> ≤ 1000 mg/kg:	no
Dermal repeat-dose NOAEL ≤ 200 mg/kg:	
Dermal LD <sub>50</sub> /Inhalation LD <sub>50</sub> < 10:	
<i>In vivo</i> dermal absorption rate > 10%:	
Estimated dermal exposure at WES > 10%:	

**a skin notation is not warranted**

## IDLH

Is there a suitable IDLH value available?

No



## Additional information

Molecular weight:	60.09
Conversion factors at 25°C and 101.3 kPa:	1 ppm = 2.46 mg/m <sup>3</sup> ; 1 mg/m <sup>3</sup> = 0.4 ppm
This chemical is used as a pesticide:	<input type="checkbox"/>
This chemical is a biological product:	<input type="checkbox"/>
This chemical is a by-product of a process:	<input type="checkbox"/>
A biological exposure index has been recommended by these agencies:	<input type="checkbox"/> ACGIH <input type="checkbox"/> DFG <input type="checkbox"/> SCOEL

## Workplace exposure standard history

Year	Standard
<a href="#">Click here to enter year</a>	

## References

American Conference of Industrial Hygienists (ACGIH®) (2018) TLVs® and BEIs® with 7<sup>th</sup> Edition Documentation, CD-ROM, Single User Version. Copyright 2018. Reprinted with permission. See the [TLVs® and BEIs® Guidelines section](#) on the ACGIH website.

European Chemicals Agency (ECHA) (2019) Propyl alcohol – REACH assessment.

National Industrial Chemicals Notification and Assessment Scheme (NICNAS) (2013) 1-Propanol: Human health tier II assessment – IMAP report.