



## Aspiration Hazard

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### ***How is Aspiration Hazard defined under OSHA's Hazard Communication Standard (HCS)?***

Aspiration means the entry of a liquid or solid chemical directly through the oral or nasal cavity, or indirectly from vomiting, into the trachea (windpipe) and lower respiratory system. This can result in severe effects such as chemical pneumonia (lung inflammation with breathing difficulty), pulmonary (lung) injury or death following aspiration.

### ***How is Aspiration Hazard classified under HCS?***

A chemical is classified as an aspiration hazard based on good quality human evidence. In addition, a liquid substance or mixture can be classified as an aspiration hazard solely on the basis of kinematic viscosity measurement. Viscosity is a fluid's resistance to flow, that is, its thickness. Honey has a higher viscosity than water, for example.


**Table 1: Classification Criteria**

Category	Category 1
<b>Description</b> <b>Category 1: Chemicals known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard</b>	A substance shall be classified in Category 1: (a) If reliable and good quality human evidence indicates that it causes aspiration toxicity (See note); or (b) If it is a hydrocarbon and has a kinematic viscosity $\leq 20.5 \text{ mm}^2\text{S}$ , measured at 40° C.

Note: Examples of substances included in Category 1 are certain hydrocarbons, turpentine and pine oil.

Table 2 shows some of the label elements for Aspiration Hazard. The precautionary statements are not included due to space limitations of this fact sheet. See §1910.1200 for complete classification and labelling information.

**Table 2: Hazard Communication Label Elements for Classification Category**

Category	1
<b>Pictogram</b>	
<b>Signal Word</b>	Danger
<b>Hazard Statement</b>	May be fatal if swallowed and enters airways.

### **Important considerations in classifying a substance as an Aspiration Hazard:**

Some petroleum distillates and certain chlorinated hydrocarbons have been shown to pose an aspiration hazard in humans. Primary alcohols and ketones have been shown to pose an aspiration hazard in animal studies, but lack human evidence. A methodology for determining aspiration hazard in experimental animals has not been standardized; thus positive experimental evidence in animals can only serve as a guide to possible human aspiration toxicity.

Classification criteria utilize kinematic viscosity measurements. Kinematic viscosity is a fluid's resistance to flow under the influence of gravity, thus the higher the kinematic viscosity, the more viscous the material. Kinematic viscosity, is the ratio of dynamic (absolute) viscosity to density, and can be converted from dynamic viscosity using the following conversion:

$$\frac{\text{Dynamic viscosity (mPa}\cdot\text{s)}}{\text{Density (g/cm}^3\text{)}} = \text{Kinematic viscosity (mm}^2\text{/s)}$$

While the definition of an aspiration hazard per HCS includes the entry of both solids and liquids into the respiratory system, the criteria above in part (b) of Table A.10.1 is only intended to apply to liquids and mixtures. Special considerations apply to classification of aerosols and mists. The key to such classification is whether a pool of liquid product may be formed in the mouth when dispensed, and may then be aspirated

### **How is classification applied to mixtures?**

A mixture is classified in Category 1 on the basis of reliable and good quality human evidence. When the mixture itself has not been tested, but there are sufficient data on both the individual ingredients and on similar mixtures, these data are used in accordance with bridging principles set forth in the HCS for aspiration toxicity. These include: dilution, batching, concentration of mixtures, interpolation within one toxicity category, and substantially similar mixtures. For application of the dilution bridging principle, the concentration of aspiration toxicants shall not be less than 10%. When data is available for some or all of the ingredients of a mixture, the following rules apply:

A mixture is classified in Category 1 when:

1. It contains  $\geq 10\%$  of an ingredient or ingredients classified in Category 1, and the mixture has a kinematic viscosity that is  $\leq 20.5 \text{ mm}^2/\text{s}$ , measured at  $40^\circ\text{C}$ .
2. In the case of a mixture that separates into two or more distinct layers, the entire mixture is classified in Category 1 when one of the layers contains  $\geq 10\%$  of an ingredient or ingredients classified in Category 1, and has a kinematic viscosity that is  $\leq 20.5 \text{ mm}^2/\text{s}$ , measured at  $40^\circ\text{C}$ .

### **To learn more...**

- **OSHA: Hazard Communication:** <https://www.osha.gov/dsg/hazcom/index.html>  
HCS .
- **SCHC site:** <http://www.schc.org/osha-alliance>

*The information contained in this sheet is believed to accurately represent current OSHA HCS requirements. However, SCHC cannot guarantee the accuracy or completeness of this information. Users are responsible for determining the suitability and appropriateness of these materials for any particular application.*

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