

Solvent Miscibility Table

What is Miscibility?

Miscibility defines how substances combine (or mix) to form a homogenous solution without precipitates. Miscibility most often refers to liquids but can also apply to gas and solid phases.

Research concerning miscibility often involves the [materials science](#) chemistry domain where additional strategies to predict substance interactions could accelerate discoveries. Specific applications have been reported in several areas:

- polymer research for pharmaceuticals
- novel solvents for advanced materials such as organic semiconductors
- [ionic liquids](#) used as electrolytes, as in the case of rechargeable lithium-ion batteries



How to Determine Miscibility

The most common determination of miscibility is by visual evaluation. If two substances form a layer, they are clearly immiscible. More precise methods of determination include chromatographic analysis such as spectroscopy as well as viscometry, osmometry, and calorimetry.

It's easy enough to look up the miscibility of common laboratory solvents on charts like the one provided below; however, novel and new substances or solvent combinations are unlikely to be listed. In these cases, miscibility can be predicted employing the same general rules for [solubility](#). Like dissolves like. Compounds with similar bond types are more likely to be soluble (and sometimes miscible).

How is the Miscibility of a Liquid with Water related to the Liquid's Polarity?

Common Solvents

2-Propanol
Acetone
Acetonitrile
Chloroform
Dichloromethane
Ethyl Acetate
Hexane
Methane
2-Propanol
Tetrahydrofuran
Toluene
Water

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Solubility and Miscibility

Solubility and miscibility describe similar phenomena, but they are not the same.

Solubility exists on a spectrum. Substances may combine together poorly or very well, and it's possible to describe solutions as "partially soluble" or "mostly soluble."

Miscibility, however, is an absolute property that is not expressed in degrees. When substances are miscible, there are no layering effects, precipitates, partial mixing, or separation. Miscible means the substances mix completely.

If two substances are miscible, they are also completely soluble in one another irrespective of the order of introduction. For example, **tetrahydrofuran (THF)** and **water** are miscible.

Miscibility Gap

A miscibility gap occurs when the substances being mixed exist at more than one phase and as a result experience a gap in miscibility. In other words, the substances are unable to mix because they do not exist in the same phase or in the compatible phase under the conditions. Phase is affected by temperature and pressure.

Additional Resources for Common Solvents

We've summarized the miscibility table above on individual solvent pages within our solvent center. Click on one of the buttons below to explore other commonly referenced solvent properties, including lists of substances with which it is miscible or immiscible and bond dipole moment.

[➤ Acetone](#)[➤ Dimethyl Sulfoxide](#)[➤ 2-Propanol](#)[➤ Acetonitrile](#)[➤ Ethyl Acetate](#)[➤ Tetrahydrofuran](#)[➤ Chloroform](#)[➤ Hexane](#)[➤ Toluene](#)[➤ Dichloromethane](#)[➤ Methanol](#)[➤ Water](#)

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