



Anhydrides and Lactones Database

This database of 328 infrared spectra has been compiled specifically to present compounds containing these organic compounds. This collection of unique substances can be used for identification, classification, and verification of these materials.

An anhydride is a water reactive compound that gives an acid or a base when combined with water. These compounds are formally derived by the elimination of a molecule of water. An anhydride is typically an oxide of a nonmetallic element or an organic radical, capable of forming an acid by uniting with the elements of water. The anhydride is so called because it may be formed from an acid by the removal of water.

Many anhydrides will react readily with ambient humidity and even the water present in your skin or lungs. The reaction of anhydrides with water is often very violent and exothermic. The anhydrides are used primarily as curing agents for alkyl and epoxy resins. They are also one of the basic building blocks of polyesters. They often are good dehydrating agents.

Normally anhydrides contain two of the same acid molecules, but, they can contain two different acids. In this case both acids are listed in alphabetical order, again adding the word anhydride to the end. Anhydrides can be formed from diacids to form cyclic anhydrides. These are named as an alkanedioic anhydride.

Lactones, the cyclic esters of hydroxy acids, result from the internal elimination of water between the hydroxyl and carboxyl groups. This reaction takes place when the hydroxy acid is liberated from its salts by a mineral acid. They are formed when the acid and alcohol functions are part of the same molecule. In other words, they are cyclic esters and occur in a wide range of natural substances.

The lactones are mostly liquids which are readily soluble in alcohol, ether and water. On boiling with water, they are partially reconverted into the hydroxy acids. They are easily saponified by the caustic alkalis. Lactones are known with rings of all sizes from 3 to 20 or more, although 3-membered rings are extremely unstable. The easiest to synthesize are five- and six-membered lactones.

Each compound in this database is identified by its chemical name and the method of analysis as well as structural formula, molecular formula, and molecular weight. Synonyms, melting points, boiling points, literature references, and comments may be displayed when available.



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