

What do these terms mean?

Kappa Values

When you read the descriptions of material quality you sometimes read statements like these about kappa values: “kappa values are slightly high“, or ”with the exception of untested kappa values“.

What do kappa numbers mean and what influences them?

The kappa number is a method to determine cellulose levels. It's an indicator of the level of lignin content (= wood pulp content). Determining the kappa level is based on oxidation of lignin residues. The use of a means of oxidation (in this case potassium permanganate) is the determining factor of lignin content. In turn, lignin content is influenced by the combination of raw material content. In other words: The higher the share of cellulose, the less lignin and the lower the kappa number.

What value limits are set for archive standards?

Both DIN ISO 9706 and ISO 16245 contain a clear maximum value for kappa numbers: a maximum of 5.

All experts agree that this value limit can only be exceeded in the long term when pure cellulose is used. The composition of raw materials in recycled materials is not as clearly defined as in the descriptions of new cellulose material. This explains the difference between the various archive materials offered on the market. Many times, selected recycling materials are offered because of the price differences (“secondary fibers”). This means that there will be a high possible range of lignin content and thus a higher kappa value. Generally, this leads to values that exceed the maximum of 5 as set out in industry standards.

What does this mean exactly for my archived material?

The lignin content is 0.12% per unit of kappa value. Thus, at a value limit of maximum 5, the lignin content should be maximum 0.6%. This may sound like a relatively small amount, or like a factor that you can ignore. However, it has proven effects on the yellowing process (it speeds up yellowing) and on the “binding” of fibers, and thus on the stability of the material.

Fact: Kappa values are by far the most important aspect when it comes to the chemical requirements of archival material. If you have valuable items in your archives, you shouldn't compromise on kappa value.