

Compression Strength

There are two ways of measuring the compression strength, the

- Ring Crush Test (RCT)
- Short-Span Compressive Test (SCT)

Both tests are similar in that the strength of the liner or the fluting is measured in machine and cross directions. However, there is no universal formula to convert SCT to RCT as there isn't a simple relationship between the two values. Therefore, the conversion between SCT and RCT needs to be completed for each specific supplier.

Ring Crush Test :

The conversion will also change with basis weight. It is speculated that this dependency of basis weight is caused by a tendency of samples to buckle in the RCT because of a longer span length than the SCT, viz. 12 mm and 0.7 mm respectively.

The RCT also depends on the quality of specimen preparation. Only an exact parallelism of the specimen and guides guarantees an exact determination of the Ring Crush Strength. Thus, the SCT frequently replaces it.

Short Span Compressive Test :

The material characteristic "compressive strength" can be determined with high accuracy using SCT because of the buckling stability provided by short test lengths over traditional testing methods (Ring Crush Test, Corrugated Crush Test or Linear Crush Test).

Due to these technical advantages, the SCT is being used more and more worldwide. Thus qualified paper testing laboratories recommend using the SCT to predict the final characteristics of boxes.

For those users still not very familiar with this property, it is possible to calculate back the RCT value knowing the value of the SCT. However, there are some important limits to this practice, as highlighted above, which should be taken into serious consideration.

Short Span Compressive Test :

The formula is the equation of a linear regression of the RCT and SCT values of samples with different basis weights. Lorentzen and Wettre provide a general equation which should be considered as a standard example and not used directly without a careful check of the parameters.

- $RCT_{CD} = 120 \times SCT_{CD} - 97$ or approximately
- $RCT_{CD} = 95 \times SCT_{CD} (N)$

The equation is specific for each paper machine. This means that the equation should be agreed upon by producer and users based on a series of dedicated tests.

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