IGNITION PROPENSITY OF CIGARETTES ACC. TO ISO 12863 USING TWO DIFFERENT SUBSTRATES

Will alternative filter paper substrates lead to a significant difference in the IP test results?

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Abstract

There are two standards for determining the ignition propensity of cigarettes: ASTM E.2187-09 and ISO 12863. Contrary to ASTM E.2187-09, ISO 12863 allows for using other substrate materials as an alternative to Whatman No.2 filter paper, as long as such substrates are equivalent. The target of this study was to determine, if the LIPCan filter paper qualifies as an alternative substrate. LIPCan filter papers comply with the requirements in section 7.3.2 from ISO 12863. Four different LIP cigarettes (king size and super slim) were used for this study. The cigarettes were tested according to ISO 12863 and ASTM E.2187-09 on Whatman No.2 and on LIPCan filter paper. All tested cigarette brands passed both test on Whatman No.2 and LIPCan filter paper.

The results show that, within the typical variation of the test according to ISO 12863, LIPCan filter paper is equivalent to Whatman No.2.

Objective

Does LIPCan filter paper qualify as an alternative substrate to Whatman No.2 filter paper as allowed for in ISO 12863

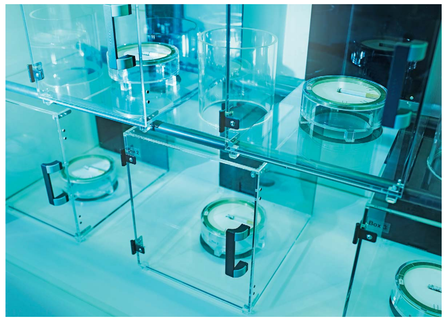
Materials

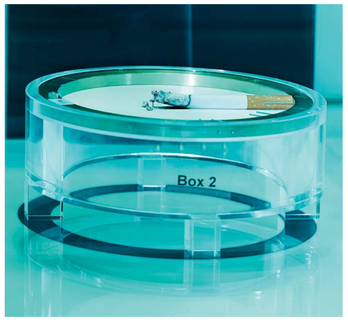
Two commercial Austrian cigarette brands – king-size & slim
One LIP sample cigarette brand
NIST SRM 1082 (Standard Reference Cigarette for LIP)

Whatman No.2 filter paper & LIPCan filter paper

Methods

ISO 12863, ASTM E.2187; 12 replicates of 40 cigarettes tested per substrate





Results and Discussion

All tested cigarette brands are below the legally required limit of 25% full length burn. A statistical evaluation of the test results shows that the differences between the two filter papers are within the statistical tolerances at a probability of error of 5% and less. Also it can be concluded that at a probability of error of 5% the difference between the test results is in no case greater than 4% (yellow line). Based on these results LIPCan filter paper can be considered equivalent to Whatman No. 2 filter paper.

Comparison of the FLB performance depending on the substrate

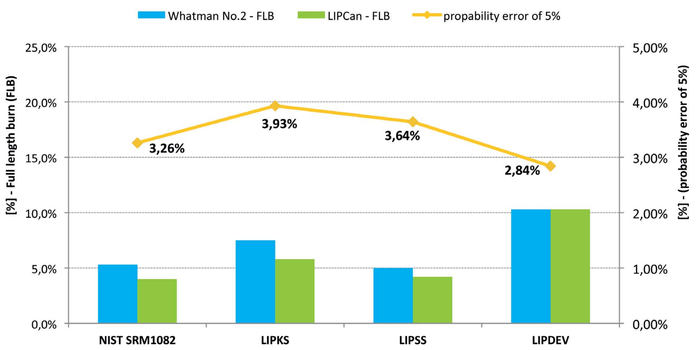


Figure 1 shows the ignition propensity test results of the four different LIP cigarette samples.

Two batches of each filter paper have been tested for their mass according ISO 12863 in a conditioned and a dried state. For both filter papers the 95% confidence intervals of the mass are within the tolerances provided in section 7.3.2 of ISO 12863 for the conditioned paper (26.1±0.5) g and for the dried paper (24.7±0.5) g. It can be concluded that LIPCan filter paper and Whatman No. 2 filter paper fulfill the requirements on the mass of the substrate for the ignition propensity test according ISO 12863.

Paper mass requirement (ISO 12863 - 7.3.2)

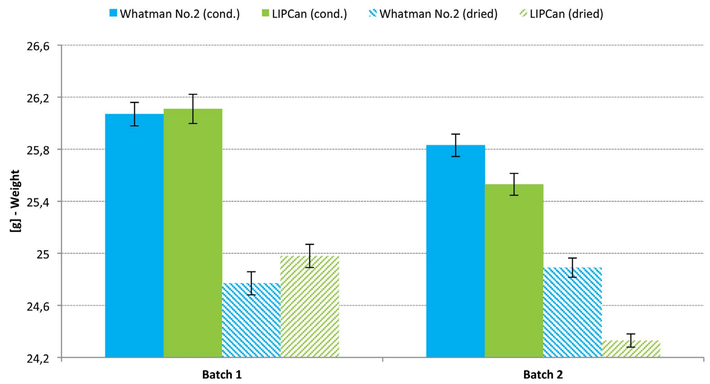


Figure 2 shows the mean mass of five sets of 15 sheets of Whatman No.2 filter paper (blue) and LIPCan filter paper (green).

Conclusions

LIPCan filter papers are within the required tolerances for paper mass according to section 7.3.2 of ISO 12863 and section 9.3 of ASTM E.2187-09. There are no statistically significant differences in ignition propensity test results between LIPCan filter paper and Whatman No.2.
Within the typical variation of the test according to ISO 12863, LIPCan filter paper is equivalent to Whatman No.2.

References

ISO 12863, Standard test method for assessing the ignition propensity of cigarettes, ISO, Geneva, Switzerland

ASTM E.2187, Standard test method for measuring the ignition strength of cigarettes, ASTM International, West Conshohocken, PA