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Allgemeine Lufttechnik

Introductory article on the newly developed EN 16770:2018

Safety of woodworking machines Safety of woodworking machines - Chip and dust extraction systems for indoor installation – Safety requirements

Frankfurt, December 13, 2018 - The Technical Committee CEN/TC 142 “Woodworking machines – Safety“ finalized its work on EN 16770:2018. This European standard defines and specifies the safety requirements for dust extractors. These are extraction systems with a nominal volume flow rate of up to 8 000 m³/h and a volume of the dust loaded part of up to 3,5 m³. The German language standard DIN EN 16770 was published December 2018.

The scope of EN 16770 covers chip and dust extraction systems for indoor use designated to be connected to woodworking machines. This newly created standard is of considerable importance both to machine and extraction system manufacturers and to the responsible bodies for occupational safety and health protection.

EN 16770 replaces the national predecessor standard DIN 8416:2000-10 which left many questions unanswered and no longer reflects the current state of standardization. Nevertheless, the essential requirements of EN 16770 are based on findings that were already the basis of DIN 8416. Especially, the non-existent explosion risks with small dust extraction devices.

The new standard is important, because with the use of ever more powerful woodworking machines, the demands placed on dust extractors are also increasing. The standard divides dust extractors into different types depending on the volume of the crude air part. Safety requirements for these dust extractor types A, B, C1, C2, D are defined.

Types of dust extractors (according to EN 16770:2018, Table A.1)

Dust extractor type	Volume of crude air part in m ³	Pressure shock resistance of housing in mbar	Active ignition source detection and suppression system	Fire suppression system
A	≤ 0,8	not specified	Not required	Not required
B	> 0,8 bis ≤ 1,2	≥ 200	Not required	Required (automatic)
C1 (offline filter cleaning)	> 1,2 bis ≤ 2,3	≥ 200	Not required	Required (automatic)
C2 (online filter cleaning)	> 1,2 bis ≤ 2,3	≥ 200	Required	Required (automatic)
D	> 2,3 bis ≤ 3,5	≥ 200	Required	Required (automatic)

Dust extractors according to EN 16770 contain the following safety features:

Residual dust content in the recirculation air

When recirculation air is used (depending on national regulation), the residual dust content in the recirculation air shall not exceed 0,1 mg/m³.

Performance requirements

The design and construction of the extraction system shall enable all connected woodworking machines to have as a minimum the indicated volume flow rate. For the effective extraction of woodworking machines, the vacuum shall be at least 2 000 Pa at an average air velocity of 22 m/s at the inlet of the dust extractor. In addition, the minimum runtime before filter cleaning shall be at least 15 min.

Fire suppression system (for types B, C1, C2, D)

The fire suppression system is a device, which suppresses actively the fire inside of the dust extractor. It consists of a thermal sensor, a control system and a fire suppression part, including pipes, a storage for the suppression media and a sprinkler system.

Active ignition source detection and suppression system (for types C2, D)

The active ignition source detection and suppression system prevents the entry of active ignition sources via extraction ducting into the dust loaded part of the dust extractor. Detection occurs via one or more sensors to prevent deflagration.

Noise

According to the current state of the art, it is possible to design extractors so that the A-weighted emission sound pressure level, measured without chips and dust load, does not exceed 75 dB(A).

EN 16770 provides European manufacturers of dust extraction systems with guidelines for the safe construction and placing on the market of such systems. It enables the operator and interested parties to make a fair comparison of the systems on the market. It also ensures the dismantling of trade barriers. The standard also serves to define test principles for the individual types of dust extractors.

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picture caption:

Dust extractors for indoor use according to EN 16770

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