REPORT

issued by an Accredited Testing Laboratory

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Date: 2019-11-28

Reference: 9F028686

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Correlation between EN 16516 and ASTM D 6007

Commission

Determination of correlation for IOS-MAT-0181 between emission tests according to EN 16516 performed at RISE and the factory production control method ASTM D 6007 performed at the mill.

Test objects

Five samples of particleboard. All samples were picked out by the manufacturer and sent to RISE.

The test objects represent the following product types of particleboard:

Product type P1: 12-39 mm, Recipe 16731/15421
Product type P2: 12-38 mm, Recipe 16721/12851

Method

The determinations of formaldehyde emission were carried out according to EN 16516 (German criteria) with test conditions as below

Test conditions:

Duration of chamber test:	Steady-state concentration determined as an average of a double-determination after 28 days
Temperature:	23 ± 1 °C
Relative humidity:	50 ± 5 % RH
Air exchange:	0.5/h
Loading factor:	1.8 m^2/m^3
Edge sealing: (ratio open edge/surface area)	Partly sealed edges 1.5 m/m^2

Results

The results from the emission measurements according to EN 16516 at RISE and the respective ASTM D 6007 values from the mill are shown in Table 1 below:

Sample	EN 16516 German criteria [ppm] (at RISE)	ASTM D 6007 [ppm] (at mill)
1. 16 mm, produced 2019-08-20	0.066	0.051
2. 18 mm, produced 2019-08-20	0.088	0.075
3. 12 mm, produced 2019-10-14	0.081	0.066
4. 16 mm, produced 2019-10-11	0.074	0.045
5. 38 mm, produced 2019-10-02	0.065	0.031

Table 1

The results show that the tested samples comply with the emission requirements of IOS-MAT-0181/EN 16516 (German criteria) for flat particleboard (0.1ppm).

Correlation evaluation

The correlation between the emission measurement in chambers performed at RISE (EN 16516, German criteria) and the factory quality control method performed at the mill (ASTM D 6007) have been calculated, see the correlation diagram in figure 1 below.

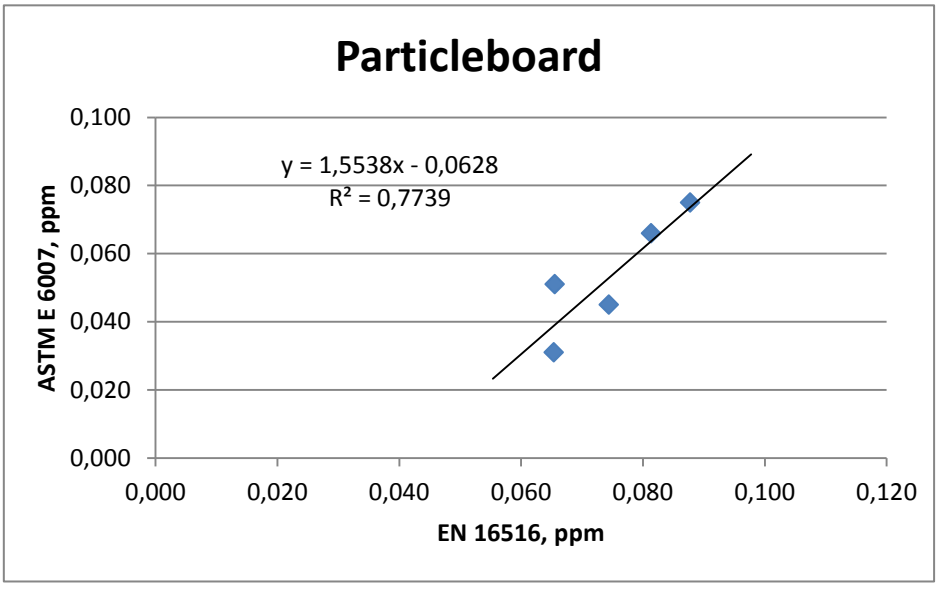

Figure 1: Correlation between ASTM D 6007 and EN 16516, German criteria

Correlation of the two methods was made based on linear regression (Fig. 1).

The minimum acceptable correlation coefficient, R should be > 0.878 for five samples/data pairs according to EPA TSCA Tile VI which is fulfilled here (R = 0.880).

A process control value, QCL has been calculated with a measurement uncertainty correction at 95% confidence interval as follows:

QCL: 0.077 ppm

Conclusions

The correlation and QCL is valid for the following products:

- Product type P1: 12-39 mm, Recipe 16731/15421
- Product type P2: 12-38 mm, Recipe 16721/12851

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