This letter is in response to "An Evaluation of the Global Equivalence Ratio Concept for Compartment Fires: Data Analysis Methods" by C.J. Wieczorek, U. Vandsburger and J. Floyd, *Journal of Fire Protection Engineering*, Vol. 14, No. 1, 2004. The authors present both a literature review and the results from new experiments regarding species formation in compartment fires.

In the literature review part of the paper, the authors discuss results from the measurements of species mole fraction at different positions: in the upper layer, the exit plane, and in an exhaust hood. They also relate the results to the concept of global equivalence ratio. In this discussion, the authors say that Lönnermark et al. [1] did not report at what equivalence ratio external burning occurred. This is not accurate. The information is not summarized in one table for all fire tests performed, but the information on flashover is given graphically in Appendix 2 and in the test protocols in Appendix 4. This information can then be used together with the time resolved data for the equivalence ratio, presented graphically in Appendix 2.

To help the reader, the information on the equivalence ratio at the time for flashover is presented in Table 1 in this Letter. The results are from fire tests in a compartment with the dimensions 2.4 m $\times$ 3.6 m $\times$ 2.4 m with a door opening, originally 0.8 m wide and 2 m high. The ventilation inside the compartment was altered by varying the opening height, keeping the soffit at the same height (2.0 m above the floor in the room) throughout the test series. The equivalence ratio was measured with a phi meter [2,3] in most cases. However, for some of the tests, due to clogging of the sampling probe to the phi meter, the equivalence ratio was instead calculated from the mass loss rate and the mass flow through the opening.

The time history of the fire is important for the results. Fast changes can give variations in the time to flashover. The size of the opening alters the combustion. This is one of the explanations for the differences found in the equivalence ratio at which flashover occurred for the same fuel, but with different opening sizes. More details about the tests and time resolved data can be found in the report by Lönnermark et al. [1].

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Table 1. Equivalence ratio, ϕ, at the time of flashover.

Test ID[a]	Fuel area (m^2)	Opening height (m)	Time to flashover[d] (min:s)	ϕ
PP3	1.2	0.89	15:24	0.94
PP4	1.2	0.56	15:01	1.31
PP5	1.2	0.68	18:06	0.95
PP6	1.2	0.45	25:08	0.96
Ny2	1.4	0.89	–	0.88[e]
Ny3	1.4	0.56	26:54	1.37
Ny4	1.4	0.68	16:13	0.80
Ny5	1.4	0.45	25:50	1.15
TMTM2	1.2	0.89	16:26	1.11
TMTM3	1.2	0.56	19:35	2.18
TMTM4	1.2	0.68	18:24	1.45
TMTM5	1.2	0.45	21:52	1.30
CNBA1	1.4	0.89	–	0.23[e]
CNBA2[b]	1.4	0.89	33:37	1.05
CNBA3[b]	1.4	0.89	–	0.48[e]
CNBA4[b,c]	1.4	0.89	28:24/31:41[f]	0.96/2.22
CB3[c]	0.5	0.89	35:02	1.39
CB4[c]	0.8	0.89	6:39	1.14
CB5[c]	0.8	0.45	14:23	–[g]
CB6[c]	0.8	0.68	9:06	1.92

[a]PP = polypropene, Ny = Nylon66, TMTM = tetramethylthiuram monosulfide, CNBA = 4-chloro-3-nitrobenzoic acid, and CB = monochlorobenzene.
[b]Mixed with some nonwoven polypropene.
[c]The equivalence ratio was calculated from mass loss rate and mass flow through the opening.
[d]Flashover is here defined as the moment after which there is constant burning outside the room.
[e]Flashover was not reached; the value represents the maximum equivalence ratio during the test.
[f]Flashover was reached twice during the test.
[g]The calculated equivalence ratio at the time for the flashover was uncertain and is not presented here.

REFERENCES

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2. Babrauskas, V., Parker, W.J., Mulholland, G. and Twilley, W.H., "The Phi Meter: A Simple, Fuel-independent Instrument for Monitoring Combustion Equivalence Ratio," Rev. Sci Instrum., Vol. 65, No. 7, pp. 2367–2375, 1994.
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