TEST REPORT

Your Ref:

Date: 27 Mar 2006

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SUBJECT

Evaluation of Toxic Fumes Generated From "Aluminum Composite Panel" During Burning

CLIENT

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Attn : Mr Charoenchai Rotjanaprasert

DESCRIPTION OF SAMPLE

One piece of composite panel sample labeled as follows was received on 17 Mar 2006.

1. AATIS-FR Type / Aluminium composite panel
   (Non Combustible Mineral Filled Core)

DATE OF ANALYSIS

21 Mar 2006 – 27 Mar 2006

METHOD OF TEST

1. Sample Preparation of Test Specimen
The Aluminum layer of the panel was peeled off and the following test was carried out on the core of the sample.

2. Fire Effluent Evaluations

2.1 Generation of fire effluents
According to ISO-TR 9122-4:1993 as reference (Tube Furnace Model).

2.2 Evaluation of toxic fumes in fire effluents
According to ISO-TR 9122-3:1993 as reference.

METHOD OF TEST (Cont'd)

Approximately 1.0g of the sample was then used for the test in a stream of air at the ramp rate of 20°C/min to 800°C in a tube furnace. The speed of air flowing across the sample was 20ml x mm^{-2} x h^{-1}. The gases and vapours generated from the sample were collected from 20mins onwards.

Toxic fumes collected during the burning were analysed by the following methods:

a) Carbon Monoxide and Carbon Dioxide : Directly determined by Horiba Automotive Emission Analyzer
b) Hydrogen Cyanide : By Pyridine – Pyrazalone Method
c) Others ions : By Ion Chromatography

RESULTS

Table 1: The Toxic Fumes Results For "Aluminum Composite Panel"

Toxic Fumes Generated	"Aluminum Composite Panel" (mg/m^3 of Fire Effluents)	IDLH Values Limits [a] (mg/m^3)
1. Carbon Dioxide, Average	375	73 000
(Carbon Dioxide, maximum)	3575	-
2. Carbon Monoxide, Average	<250	1 400
(Carbon Monoxide, maximum)	341	-
3. Hydrogen Fluoride. HF	<5	25
4. Hydrogen Chloride, HCl	<5	76
5. Hydrogen Bromide, HBr	<5	101
6. Sulfur Dioxide, SO_2 [b]	<5	270
7. Nitrogen Dioxide, NO_2 [c]	<5	38
8. Hydrogen Cyanide, HCN	6	56

[a] The values in Table 1 are the IDLH values of the listed gases (the concentration of the gas in the atmosphere which for an exposure time of 30mins is immediately Dangerous to Life or Health) given in tne NIOSH Guide [1].
[b] Sulfur Dioxide includes Sulfur trioxide expressed as sulfur dioxide
[c] Nitrogen dioxide includes nitric oxide expressed as nitrogen dioxide

1. The above analytical toxic fume results generated from the sample were below the IDLH Value of the listed gases (the concentration of the gas in the atmosphere which for an exposure time of 30mins is immediately Dangerous to Life or Health) in the NIOSH Guide.

TAN SER LING
TECHNICAL EXECUTIVE

DR LIN JIANHUA
ASSISTANT VICE PRESIDENT
MICROCONTAMINATION DIAGNOSIS TESTING GROUP

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