



SOUTHWEST RESEARCH INSTITUTE



Smoke Density and Toxicity Testing

Southwest Research Institute® (SwRI®) performs smoke density and toxicity tests to a variety of standard procedures. Standard tests are supplemented for customized procedures to meet client-specific needs. Qualification and verification testing can be provided in support of third-party quality assurance programs.

Capabilities

- Smoke density (specific optical density, D_s) and mass loss measurements
- Time evolution toxic gas production
- Gas yield determinations (amount of gas produced per gram of sample consumed)
- LC_{50} and LA_{50} determination
- Collection of gas samples for a variety of chemical analyses

Related Services

- Fourier transform infrared (FTIR) quantitative and qualitative gas analysis
- FTIR custom calibration and quantification
- Listing, labeling and follow-up inspection services



Smoke density measurements are made based on the attenuation of a light beam through smoke accumulating within the chamber.

Toxicity of fire effluents is determined by introducing gas samples in an FTIR spectrometer.

SOUTHWEST RESEARCH INSTITUTE
ASTM E 662 SMOKE DENSITY TEST REPORT

Client: SwRI	Heat Flux: 25 kW/m ²	
Operator: E. Vergara	Exposure Mode: Piloted (Flaming)	
Test Date(s): August 21, 2001	Orientation: Vertical	
Material ID*: Standard Reference	Color: White	
Description*: Polycarbonate	Thickness: 0.2 in. (6.0 mm)	
	Receipt Date: August 15, 2001	
	Date Prepared by SwRI: August 16, 2001	

* Information/instructions provided by the Client

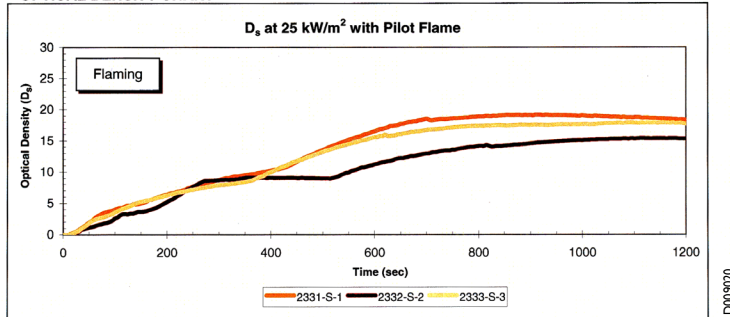
RESULTS

Test ID	Initial Mass (g)	Final Mass (g)	Mass Loss (g)	1.5 min D _s	4.0 min D _s	Maximum D _s	Time to Max. D _s (sec)	Correction Factor	Corrected Max. D _s
2331-S-1	39.70	39.58	0.12	5	8	19	1200	-	19
2332-S-2	39.56	39.45	0.11	7	7	15	1192	-	15
2333-S-3	39.83	39.72	0.11	6	9	18	1195	-	18
Average	39.70	39.58	0.11	6	8	17	1196	-	17

OBSERVATIONS

Test ID	Observed Smoke (sec)	Observed Discoloration (sec)	Observed Blistering (sec)	Time to Ignition (sec)	Flames to Top (sec)	Initial Flame Out (sec)	Second Ignition (sec)	Final Flame Out (sec)
2331-S-1	464	275	74	None	-	-	-	-
2332-S-2	450	300	82	None	-	-	-	-
2333-S-3	425	345	65	None	-	-	-	-
Average	446	307	74	-	-	-	-	-

OPTICAL DENSITY CHART



Smoke density data sheet.

We welcome your inquiries.
 For more information,
 please contact:

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A Department of



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 Material Flammability Section
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SOUTHWEST RESEARCH INSTITUTE®

Southwest Research Institute® is a premier independent, nonprofit research and development organization. With eleven technical divisions, we offer multidisciplinary services leveraging advanced science and applied technologies. Since 1947, we have provided solutions for some of the world's most challenging scientific and engineering problems.

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