

ANSI / ASTM E-662 Smoke Generation Density Test

This test, the Standard Test Method for Specific Optical Density of Smoke Generated by Solid Material, is to determine the quantity of smoke generated by solid materials and assemblies in thicknesses up to and including one inch. The test is based on the attenuation (i.e.: change in the concentration) of a light beam by smoke accumulating within a closed chamber. Results are expressed in terms of specific optical density, which is derived from measuring optical density as absorbance within the chamber. The photometric scale used to measure smoke by this method is similar to the optical density scale for human vision.

The test specimens were composite 5/8" thick balsa wood cored vinyl ester laminates fabricated by the SCRIMP process with 1/16" *Thermashield** surface coating on one side. The test method protocol specifies an electrically heated radiant heat source for the non-flaming exposure of the test, and a row of air-propane flamelets to constitute the flaming combustion exposure. The test data and results are illustrated below:

DATE : 12/16/99
PROJECT # :

SUPPLIED BY:
 PRECONDITIONING TEMP: 140 deg. F
 CONDITIONING TEMP: 70 deg. F
 RADIOMETER READING: 7.01 volts
 FURNACE VOLTS: 110 volts
 BURNER FEUL: 500 cc/min. air; 50 cc/min. propane
 SPECIAL PREPERATION: NONE
 DESCRIPTION OF MATERIAL:

	NON-FLAMING			FLAMING		
SAMPLE #:	1	2	3	4	5	6
TYPE OF	no	no	no	no	no	no
HOLDER:	trough	trough	trough	trough	trough	trough
THICK(IN.)	0.123	0.123	0.123	0.123	0.123	0.123
WEIGHT(g)	25.4	24.8	26.8	25.4	25.8	25.1
T 100%	1.01E+00	1.01E+00	1.01E+00	1.01E+00	1.00E+00	1.01E+00
T MIN	9.02E-01	9.08E-01	9.21E-01	2.90E-02	4.50E-02	4.50E-02
Tmin %	89.4	90.17	91.64	2.89	4.49	4.47
Dm(20.0 min.)	6.43	5.93	5	203.25	177.95	178.12
T(CLEAR)	9.89E-01	9.92E-01	9.81E-01	8.89E-01	8.89E-01	8.40E-01
Dc(clear)	1.1	0.9	1.4	7	6.9	10.3
Dm(c)(20min.)	5.28	5.07	3.62	196.22	171.03	167.78
Ds(1.5 min.)	1.38	-0.06	0.4	2.57	4.64	4.38
Ds(4.0 min.)	1.38	0.11	-0.23	31.22	20.62	38.38
COLOR OF SMOKE:	GREY	GRAY	GRAY	GREY	GRAY	GRAY

OBSERVATION OF THE BURNING OR SMOLDERING CHARACTERISTICS OF THE SPECIMENS DURING THE TEST SUCH AS DELAMINATION, SHRINKAGE, MELTING, ECT:
 OBSERVATIONS:

OPTICAL DENSITY TEST RESULTS SUMMARY

	NON-FLAMING	FLAMING
Ds 1.5 min.	average: 0.6	3.9
Ds 4.0 min.	average: 0.4	30.1
Dm(corr)(20.0 min.)	average: 4.7	178.3