SMALL SCALE ASTM E119
FIRE RESISTANCE TESTING
FOR TPR^2 CORPORATION ON
21 MILS OF FLEXIBLE FIRESHELL™ INTUMESCENT COATING (AFES) OVER 11.5" OF 0.5 lb DENSITY OPEN CELL SPRAYFOAM INSULATION
VTEC #100-2788
TESTED: OCTOBER 30, 2007

VTEC Laboratories Inc.

October 31, 2007

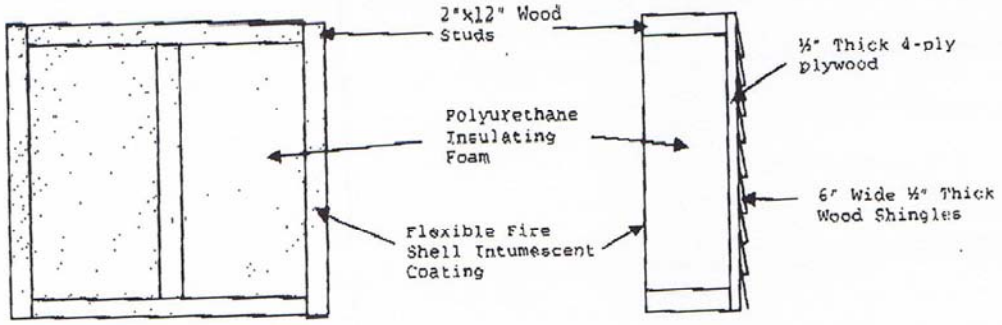
Client: TPR² Corporation
161 Interstate Lane
Waterbury, CT 06705

Attn: Mr. Richard J. Barone Jr.

Subject: Fire Resistance Testing According to ASTM E119

SAMPLE DESCRIPTION: Wall Panel with 21 mils of Flexible Fireshell™ Intumescent Coating (AFES) over 11.5" of 0.5 lb density open cell sprayfoam insulation.

The 36"x36"x12.5" thick single sheathed ½" plywood wall panel was fabricated and coated by TPR² for ASTM E 119 fire endurance testing. The wall was made up of 5 pieces of 2"x12" wood studs, 4 pieces forming a 36"x36" square frame and the fifth piece placed 18 inches from one side of the frame. One piece of 36"x36"x½" thick 4-ply plywood was attached to one side of the frame. Nine 6" wide ½" thick wood shingles were fastened to the plywood. The cavity in the frame between the plywood was filled with 11.5" thick 0.5 lb density open cell sprayfoam insulating foam. The Flexible Fire Shell Intumescent Coating (AFES) was applied to the opposite side of the plywood, on top of and covering the exposed Polyurethane Insulating Foam and wood studs at an average thickness of 21 mils dry. The wall panel was oriented so that the center stud was vertical and the plywood was facing away from the furnace.



212 Manida Street • Bronx, New York 10474 • (718) 542-8248 • Fax: (718) 542-8759 • www.vteclabs.com

PROCEDURE:

The furnace used in this test measures 3ft x 3ft x 3ft. The outside construction is steel and the furnace is lined with a ceramic refractory insulation. The furnace dimensions inside the insulation are nominally 27" x 27" x 27".

A single burner is centered vertically in the wall opposite the sample. This burner is rated for 1.5 million Btu/hr and is of the flat flame or non-impinging flame design. Furnace conditions are monitored by three Inconel-sheathed chromel-alumel thermocouples. These thermocouples are positioned 6" from the face of the sample.

The sample was oriented vertically in the front opening of the furnace. The unexposed surface temperature of the sample was monitored by six, 20-gauge type K, fiberglass sheathed thermocouples. An insulating pad was placed over each thermocouple on the unexposed side of the sample.

The fire test was run following the ASTM E119 time-temperature curve.

The endpoint for the ASTM E 119 test occurs when either all the thermocouples on the sample reach an average of 250°F + ambient starting temperature, any individual thermocouple on the sample exceeds 325 °F + ambient starting temperature, or when the sample experiences burn-through.

RESULTS:

The ambient temperature was 60°F.

At 17 minutes smoke began to emit from the sample.

At 34 minutes burn-through occurred on the plywood thus indicating failure.

The time-temperature data are contained on the following pages.

Neil Schultz
Executive Director

A. Rahim
Amirudin Rahim
Technical Director

TPR2 - 21 mils of Flexible Fireshell™ intumescent coating(AFES) over 11.5" of 0.5 lb density open cell sprayfoam insulation.

Time (mins.)	Sample 1 deg F	Sample 2 deg F	Sample 3 deg F	Sample 4 deg F	Sample 5 deg F	Sample 6 deg F	Furnace deg F	Furnace deg F	Furnace deg F	Sample Average	Furnace Average
0	68	68	67	69	68	68	61	61	59	68	60
1	68	68	67	69	68	68	902	838	947	68	897
2	68	68	67	69	68	68	899	855	957	68	902
3	68	68	67	69	68	68	953	864	993	68	937
4	68	68	67	69	68	68	923	888	998	68	937
5	68	68	67	69	68	68	995	894	1054	68	984
6	68	68	67	69	68	68	1052	889	1221	68	1052
7	68	68	67	69	68	67	1136	1040	1260	68	1156
8	68	68	67	69	68	67	1299	1088	1343	68	1243
9	68	67	67	69	68	67	1302	1334	1173	68	1267
10	68	67	67	69	68	67	1411	1311	1303	68	1347
11	67	67	67	69	68	67	1367	1432	1283	68	1363
12	68	67	67	69	68	67	1454	1428	1331	68	1400
13	68	67	69	69	68	68	1448	1421	1345	68	1410
14	68	67	72	69	68	68	1442	1498	1351	69	1426
15	70	68	77	69	68	71	1433	1520	1333	70	1427
16	72	68	82	70	68	75	1471	1396	1401	72	1433
17	76	69	89	71	69	80	1434	1510	1374	76	1442
18	82	70	99	73	71	87	1450	1532	1388	80	1453
19	88	72	113	76	73	85	1461	1526	1377	84	1455
20	95	75	125	80	75	83	1462	1536	1387	89	1459
21	103	79	135	85	81	83	1481	1525	1410	94	1472
22	112	84	143	91	94	122	1481	1546	1399	108	1475
23	121	92	150	98	112	134	1476	1579	1408	118	1485
24	131	102	156	105	126	140	1508	1568	1429	126	1498
25	139	111	162	112	137	143	1577	1518	1427	134	1504
26	145	120	169	122	145	149	1521	1578	1452	142	1517
27	152	127	178	133	151	163	1657	1238	1720	151	1531
28	159	133	188	143	157	183	1532	1618	1466	160	1537
29	166	139	198	151	161	215	1568	1624	1472	171	1555
30	175	144	209	156	164	252	1575	1645	1502	183	1576
31	185	148	222	162	167	291	1604	1627	1535	196	1588
32	195	152	236	168	168	331	1592	1666	1516	208	1588
33	205	156	250	174	169	358	1593	1665	1534	218	1593
34	215	160	263	178	168	369	1597	1585	1581	226	1613
35	229	165	283	186	170	366	1719	1552	1604	233	1627
36	243	169	301	195	177	358	1585	1791	2029	240	1776
37	269	173	335	259	185	347	2094	2015	2022	261	2058