

Table 26. Estimates of required escape times for best and worst case scenarios

Scenario		Premovement Time (s)		Movement Time (s)		Total Escape Time (s)	
		M. Home	Two-Story	M. Home	Two-Story	M. Home	Two-Story
Worst Case	Young family at night	55	55	35	35	90	90
	Elderly family at night	80	80	55	60	135	140
Best Case	Young couple in kitchen	- a	--	5	10	5	10
	Elderly couple in kitchen	--	--	10	15	10	15

a – best case scenarios neglect any premovement activity; actual escape times are likely to be longer than best case estimates

7.4 Smoke Alarm Performance

Table 27 and figures 206 to 208 present the average (for different alarm times of the same type and multiple tests of each scenario) available egress times for ion, photo, aspirated, and CO alarms as a function of installation requirement (every level, every level + bedrooms, and every room) and fire type (flaming, smoldering, and grease), for the manufactured home tests (tests SDC01 to SDC15 and SDC30 to SDC41). Table 28 includes equivalent results for the two-story home. For heat alarms and sprinklers, only a single location in the room of fire origin was included in the tests. Escape times are calculated as the time to the first alarm activation (for that type of alarm) minus the time to untenable conditions. Negative numbers thus indicate that tenability criteria were exceeded prior to alarm activation. Discussion in this section focuses on the manufactured home tests. Smoke alarm activation times and test tenability times for the two story tests were similar to comparable tests in the manufactured home and are available to facilitate similar analyses for this structure. Appendix B provides detailed data for alarm activation and test tenability.

Increasing alarm coverage from every level to every level plus bedrooms provides room of origin protection for mattress scenarios since the mattress was located in one of the bedrooms. For chair scenarios, this addition would not indicate an increase in protection for the current test series since chairs were never located in bedrooms in these tests.