

5.3.3 Improvement Plan for the Classroom

It was obtained that 97% of classroom exceeded the ANSI standard (2002) of greater than 0.70 second, and that means all this room needs to be improved. Suggestion according to ANSI standard and by using CARA software found that if all the floor material were replaced with high absorbent materials such as foam rubber on concrete as in Figure 5.6, the value of reverberation time in different frequency was less than 0.7 second. Table 5 (d) shows the sound absorption coefficient of foam rubber on concrete.



Figure 5.6 Foam rubber on concrete

Table 5 (c) Sound absorption of foam rubber on concrete

Materials	Sound Absorption Coefficient				
	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Foam Rubber on Concrete	0.24	0.57	0.69	0.71	0.73

5.4 CONCLUSIONS

The analysis of reverberation time for classrooms in a selected faculty in a public university showed that nearly all classrooms resulted in greater than 1.2 second which exceeds the recommended International Standard. Only two classrooms have optimal reverberation time and classified as acoustically comfort. However, for other classrooms which exceed the optimal standard can be improved with the replacement of foam rubber on concrete that had higher sound absorption ability. All the floor material like cement render vinyl above concrete and tile were replaced with foam rubber on concrete. Finally, the results showed a reduction of reverberation time and material with higher sound absorption capacity can improve the acoustic comfort in classrooms.