

# City of Yuma Fire Department

## Fire Sprinkler Exceptions

To determine if a B, F, M, S, E, H4, H5, H6 and Assembly occupancies may be exempt from the fire sprinkler requirement, the following procedure may be used to determine the required fire flow demand for that specific building. **If the demand is less than 750 gpm, the building will be exempt from the fire sprinkler requirement.**

The following formula will be used:  $NFF_i = (C_i) (O_i) \{1+(X) I\}$   
 C<sub>i</sub> = Construction Factor    O<sub>i</sub> = Occupancy factors    {1+(X) I} = Exposure factor

**Step 1 Determine Construction Factor**    18 is a constant number

C <sub>i</sub> = 18 X F X √Area Length X Width of Building: _____ √Area= _____ F= _____ C <sub>i</sub> /Gpm: _____	F=	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Type</td> <td style="text-align: center;">Unprot.</td> <td style="text-align: center;">Prot.</td> </tr> <tr> <td style="text-align: center;">V</td> <td style="text-align: center;">1.5 _____</td> <td style="text-align: center;">0.8 _____</td> </tr> <tr> <td style="text-align: center;">IV HT</td> <td style="text-align: center;">1.0 _____</td> <td style="text-align: center;">0.8 _____</td> </tr> <tr> <td style="text-align: center;">III</td> <td style="text-align: center;">0.8 _____</td> <td style="text-align: center;">0.8 _____</td> </tr> <tr> <td style="text-align: center;">II</td> <td style="text-align: center;">0.8 _____</td> <td style="text-align: center;">0.6 _____</td> </tr> <tr> <td style="text-align: center;">I</td> <td></td> <td style="text-align: center;">0.6 _____</td> </tr> </table>	Type	Unprot.	Prot.	V	1.5 _____	0.8 _____	IV HT	1.0 _____	0.8 _____	III	0.8 _____	0.8 _____	II	0.8 _____	0.6 _____	I		0.6 _____
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I		0.6 _____																		

**Step 2 Determine the Occupancy Combustibility Class (O<sub>i</sub>)**    Use Table C on reverse side

Class 1: Non-Combustible	0.75 _____
Class 2: Limited Combustible	0.85 _____
Class 3: Combustible	1.00 _____
Class 4: Free Burning	1.15 _____
Class 5: Rapid Burning	1.24 _____

C<sub>i</sub>= \_\_\_\_\_  
 O<sub>i</sub>= \_\_\_\_\_  
 C<sub>i</sub> X O<sub>i</sub>= \_\_\_\_\_ Gpm

**Step 3 Use Table 5-A Printed in the 1997 Uniform Building Code and also printed in the Appendix VI-E of 1997 Uniform Fire Code.**

ORD. 98-17

## MAXIMUM SQUARE FOOTAGE FOR FIRE SPRINKLER EXCEPTION

Note: Setbacks are to complying with Uniform  
Building Code Table 5-A

### Combustibility Class (Oi)

TYPE OF CONST.	1	2	3	4	5
V-N	1371	1067	771	583	501
IV-HT	3086	2402	1736	1312	1129
V-1 hr III-N III-1hr II-N	4822	3754	2712	2050	1764
II-1hr II-FR I-FR	8573	6674	4822	3646	3136

**TABLE C**  
**COMBUSTIBILITY CLASSES DEFINED**

To determine Occupancy Combustibility (Oi)  
Use with Step 2

- Class 1: Steel or concrete products storage, unpackaged
- Class 2: Ceramics manufacturing  
Concrete or cinder products manufacturing  
Court houses  
Fabrication of metal products  
Offices  
Primary metals industries
- Class 3: Automobile sales  
Baking and confectionery  
Dairy processing  
Department stores  
Discount stores  
Food and beverage - sales, service, or storage  
General merchandise - sales or storage  
Hardware, including electrical fixtures and supplies  
Leather processing  
Pharmaceutical retail sales and storage  
Soft drink bottling  
Supermarkets  
Tobacco processing
- Class 4: Apparel manufacturing  
Breweries  
Building material sales and storage  
Food processing  
Freight depots, terminals  
Furniture - new or secondhand  
Paper and paper product sales and storage  
Paper products manufacturing  
Printing shops and allied industries  
Rubber products manufacturing  
Warehouses  
Wood products sales and storage  
Woodworking industries
- Class 5: Cereal or flour mills  
Chemical manufacturing  
Chemical sales and storage  
Cleaning and dyeing material sales and storage  
Distilleries  
Fabrication of textile products, except wearing apparel  
Meat and poultry processing  
Paint sales and storage  
Plastic or plastic product sales and storage  
Plastic products manufacturing  
Rag sales and storage  
Textile manufacturing  
Upholstering shops  
Waste and reclaimed material sales and storage

**Exception:** Compliance with all the provisions of Chapter 7 is not required where the change of occupancy group complies with the requirements of Section 812.3.

**812.2.2 Change of occupancy classification to a higher hazard.** An existing building shall comply with all of the applicable requirements of this chapter when a change in occupancy group places it in a higher hazard category or when the occupancy group is changed within Group H.

**812.2.3 Change of occupancy classification to a higher hazard in all three hazard classifications.** An existing building may have its use changed to a higher hazard rating (lower number) in all three hazard category classifications designated in Tables 812.4.1, 812.4.2, and 812.4.3, provided it complies with this chapter or with Chapter 12.

**812.3 Change of occupancy classification to an equal or lesser hazard in all three hazard classifications.** A change of use to an occupancy group within the same hazard classification category or to an occupancy group within a lesser hazard classification category (higher number) in the three hazard category classifications addressed by Tables 812.4.1, 812.4.2, and 812.4.3 shall be permitted in an existing building or portion thereof, provided the provisions of Sections 812.3.1 through 812.3.5 are met.

**812.3.1 Minimum requirements.** Regardless of the occupancy group involved, the following requirements shall be met:

1. The capacity of the means of egress shall comply with *International Building Code*.
2. The interior finish of walls and ceilings shall comply with the requirements of the *International Building Code* for the new occupancy group.

**812.3.2 Groups I-1, R-1, R-2 or R-4.** Where the new use is classified as a Group I-1, R-1, R-2 or R-4 occupancy the following requirements shall be met.

1. Corridor doors and transoms shall comply with the requirements of Sections 605.5.1 and 605.5.2.
2. Automatic sprinkler systems shall comply with the requirements of Section 604.2.
3. Fire alarm and detection systems shall comply with the requirements of Section 604.4.

**812.3.3 Group I-2.** Where the new use is classified as a Group I-2 occupancy, the following requirements shall be met:

1. Egress doorways from patient sleeping rooms and from suites of rooms shall comply with the requirements of Section 605.4.1.2.
2. Shaft enclosures shall comply with the requirements of Section 703.1.
3. Smoke barriers shall comply with the requirements of Section 603.3.
4. Automatic sprinkler systems shall comply with the requirements of Section 604.2.

5. Fire alarm and detection systems shall comply with the requirements of Section 604.4.

**812.3.4 Group I-3.** Where the new use is classified as a Group I-3 occupancy, the following requirements shall be met:

1. Locking of egress doors shall comply with the requirements of Section 605.4.5.
2. Shaft enclosures shall comply with the requirements of Section 703.1.
3. Automatic sprinkler systems shall comply with the requirements of Section 604.2.
4. Fire alarm and detection systems shall comply with the requirements of Section 604.4.

**812.3.5 Group R-3.** Where the new use is classified as a Group R-3 occupancy, the following requirements shall be met:

1. Dwelling unit separation shall comply with the requirements of Section 703.2.1.
2. The smoke alarm requirements of Section 604.4.3 shall be met.

**812.4 Fire and life safety.** The fire and life safety provisions of this section shall be applicable to buildings or portions of buildings undergoing a change of occupancy classification.

**812.4.1 Means of egress, general.** Hazard categories in regard to life safety and means of egress shall be in accordance with Table 812.4.1.

**TABLE 812.4.1  
HAZARD CATEGORIES AND CLASSIFICATIONS:  
LIFE SAFETY AND EXITS**

RELATIVE HAZARD	OCCUPANCY CLASSIFICATION
1 (Highest Hazard)	H
2	I-2, I-3, I-4
3	A, E, I-1, M, R-1, R-2, R-4
4	B, F-1, R-3, S-1
5 (Lowest Hazard)	F-2, S-2, U

**812.4.1.1 Means of egress for change to higher hazard category.** When a change of occupancy group is made to a higher hazard category (lower number) as shown in Table 812.4.1, the means of egress shall comply with the requirements of Chapter 10 of the *International Building Code*.

**Exceptions:**

1. Stairways shall be enclosed in compliance with the applicable provisions of Section 703.1.
2. Existing stairways including handrails and guards complying with the requirements of Chapter 7 shall be permitted for continued use subject to approval of the code official.