



Design Guidelines for Grease Interceptors

The installation and use of a grease interceptor that is properly designed and sized for the type and size of the facility, is an important measure in ensuring that the facility does not contribute to the problems with the sewer system or experience back-ups in the facility itself. Food Service Establishments should weigh costs and benefits when evaluating grease interceptor design and capacity need. While the initial capital investment may be less with smaller capacity grease interceptor, pumping and maintenance fees may increase. Plans for future expansions should be assessed since menu expansion, seating capacity expansion or menu changes impact the effectiveness of the grease interceptor.

Application

Grease interceptors are mainly used in treating kitchen wastewater from Food Service Establishments and other similar institutions with large volume of wastewater. Influent to grease interceptors usually contain high organic loads, including FOG and dissolved particles, as well as detergents and suspended solids. Sanitary wastewaters are not usually treated by grease interceptors. Wastewater with high solids loadings should not be discharged to grease interceptors as it can upset the interceptor performance and greatly increase both solids accumulation and the need for frequent pumpout.

For details on how a grease interceptor works and maintenance of grease interceptors, please see Fact Sheet on Grease interceptors.

Basic Design Criteria

Grease interceptors must be designed to satisfy four basic criteria in order to ensure effective separation:

- **Time.** The grease interceptor must provide sufficient retention time for emulsified FOG to separate and float to the surface of the chamber.
- **Temperature.** The grease interceptor must provide adequate volume to allow the wastewater to cool sufficiently for emulsified FOG to separate.
- **Turbulence.** Turbulence through grease interceptors must be controlled so that the FOG and solids are not suspended in the wastewater. Turbulence control is especially important during high discharge rates.
- **Tankage.** The grease interceptor must provide sufficient storage capacity for accumulated FOG and solids between cleanings.

Factors Affecting Grease Interceptor Performance

1. **Velocity of Incoming Water.** A higher velocity of water will contribute to a more turbulent mixture. This will slow the FOG separation process, thereby reducing efficiency.
2. **Ratio of FOG to Water.** The higher the ratio of FOG particles to the water, the lower the efficiency of the interceptor.
3. **Specific Gravity (Density) of FOG.** FOG has a lower specific gravity than water and will rise to the surface quickly. FOG-laden food particles having a higher specific gravity than water will

linger and accumulate at the bottom, eventually passing out of the interceptor.

4. **Possible Presence of Detergents in the System.** Grease-cutting detergents will break the liquid grease into minute particles that can cause these liquids to pass through the interceptor.
5. **Percentage of Maximum Flow Capacity.** If the maximum recommended flow is exceeded, the efficiency of the interceptor will decrease considerably.
6. **Location of Grease Interceptor.** The interceptor should be located as close as possible to the source of FOG. Plumbing leading to the grease interceptor may become clogged if the wastewater cools prior to entering the grease interceptor.

Sizing Grease Interceptors

Grease interceptors are designed and sized based on anticipated flow rates and organic load for maximum efficiency. The FOG Ordinance adopted by the Orange County Sanitation District requires grease interceptor sizing to conform to the **Uniform Plumbing Code**. To calculate the size of a grease interceptor needed by a Food Service Establishment, refer to the following formula taken from Appendix H of the Uniform Plumbing Code:

No. of Meals per peak hour ¹	x	Waste Flow Rate ²	x	Retention Time ³	x	Storage Factor ⁴	=	Interceptor Size (Liquid Capacity)
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1	Meals Served at Peak Hour										
2	To calculate the Waste Flow Rate, add all that apply: <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 20px;">With dishwashing machine</td> <td style="text-align: right;">6 gallons</td> </tr> <tr> <td style="padding-left: 20px;">Without dishwashing machine</td> <td style="text-align: right;">5 gallons</td> </tr> <tr> <td style="padding-left: 20px;">Single-service kitchen</td> <td style="text-align: right;">2 gallons</td> </tr> <tr> <td style="padding-left: 20px;">Food waste disposer</td> <td style="text-align: right;">1 gallon</td> </tr> </table>	With dishwashing machine	6 gallons	Without dishwashing machine	5 gallons	Single-service kitchen	2 gallons	Food waste disposer	1 gallon		
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3	Retention Times: <table style="width: 100%; border: none;"> <tr> <td colspan="2">Commercial kitchen waste</td> </tr> <tr> <td style="padding-left: 20px;">Dishwasher</td> <td style="text-align: right;">2.5 hours</td> </tr> <tr> <td style="padding-left: 20px;">Single-service kitchen</td> <td></td> </tr> <tr> <td style="padding-left: 40px;">Single serving</td> <td style="text-align: right;">1.5 hours</td> </tr> </table>	Commercial kitchen waste		Dishwasher	2.5 hours	Single-service kitchen		Single serving	1.5 hours		
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Grease Interceptor Design and Construction Guidelines

- Grease interceptors shall be placed as close as practical to the fixture(s) being served. It shall be located where it is easily accessible at all times for inspection, cleaning, and removal of accumulated grease.
- Minimum grease interceptor size shall be 750 gallons; the maximum size shall be 1500 gallons unless authorized by OCSD in writing.
- Grease interceptors shall have two compartments. The inlet compartment shall be 2/3 of the total capacity of the interceptor and in all cases shall be longer than the maximum inside width of the interceptor. The outlet compartment shall have a minimum capacity of 1/3 of the total interceptor capacity. The liquid depth shall not be less than 2 feet 6 inches nor more than 6 feet.
- Access to each grease interceptor shall be provided by a manhole over the inlet and a manhole over the outlet. There shall also be an access manhole for each 10 feet of length for interceptors over 20 feet long. Manholes shall extend to grade, have a minimum size of 24 inches diameter or square opening, and shall have a gasketed cover at grade.
- The inlet and outlet shall have a baffle tee or similar flow device with a minimum cross sectional area equal to the required cross sectional area of the inlet. Each baffle shall extend from at least 4 inches above the liquid level to within at least 12 inches of the inside floor of the interceptor.
- Adequate partitions or baffles shall extend at least 6 inches above the liquid level. Flow from inlet compartment to outlet compartment shall be through a quarter bend, or similar device equivalent in cross sectional area to the inlet into the interceptor, and shall extend down to within 12 inches of the inside floor.
- The Inlet, outlet and main baffle shall have a free vent area equal to the required cross sectional area of the inlet pipe.

For more details regarding construction, structural, and material requirements, consult Appendix H of the UPC.