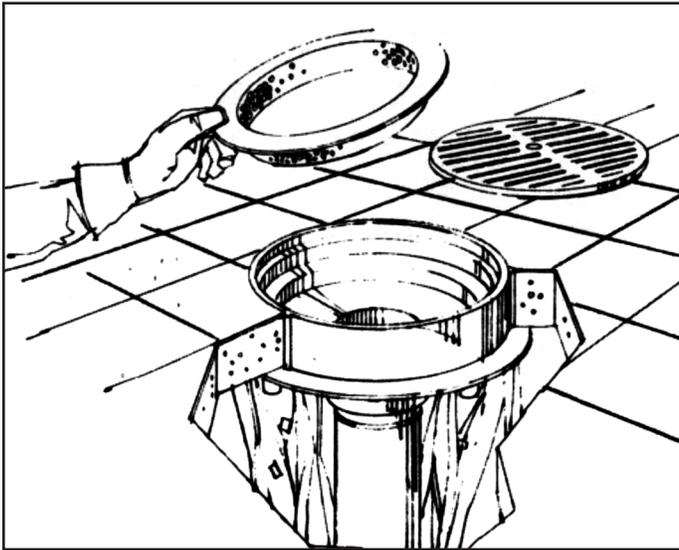


**HEALTH CARE • FOOD SERVICE • POWER GENERATING STATIONS**



**Closure Plugs**

Floor drain closure plugs are required to be installed in the outlet when the drainage system is seldom used or to prevent cross ventilation or when hydrostatic testing of the piping system is required.

When closure plugs are specified for either cast carbon steel or cast stainless steel floor drains, it is recommended the plug be constructed of brass material. This is recommended to prevent galling or “freezing” at the threaded connection. “Freezing” causes a great deal of difficulty in removing the plug and oftentimes causes destruction of the plug. Unless another material is specified, brass plugs will be furnished as standard. If cast carbon steel or cast stainless steel plugs are specified, the material will meet the specified ASTM type for castings as mentioned above. An auxiliary 3/4" plug is sometimes required within the outlet closure plug; this smaller plug will be of the same material used in construction of the primary closure plug.

Commonly specified stainless steel ASTM A-351 grades and types for “Austenitic Steel Castings for High Temperature Service” are as follows:

**Carbon Steel Castings**

Cast carbon steel butt-weld outlet drainage products are generally applicable to fossil-fueled generating station welded steel drainage systems. However, carbon steel is also used in certain systems within a nuclear-powered station in areas not subject to radioactive wastes.

All carbon steel products as specified from this manual are manufactured and “regularly furnished” in strict accordance and certified to meet requirements as set forth in ASTM A-27-Grade 70-36 Standard Specification for “Mild to Medium Strength Carbon Steel Castings for General Application.”

Any requirements other than those set forth in ASTM A-27-Grade 70-36 must be specified and known to the manufacturer prior to quotation of prices of products applicable to the project.

**Stainless Steel Castings**

Fabricated and cast stainless steel drainage products are preferred for healthcare and food service applications. A more sanitary and durable finish provides for years of quality performance. Type 304 (CF8) and type 316 (CF8M) are the most commonly specified types for these applications. Chemical resistant charts (page 8) should be consulted for determining the proper type of stainless steel to best meet the requirements of the application.

Cast stainless steel butt-weld outlet drainage products are generally applicable to nuclear fueled generating station welded stainless steel drainage systems. Stainless steel is employed where radioactive wastes are present but not necessarily limited to that use.

All stainless steel products specified from this manual are manufactured and “regularly furnished” in strict accordance and certified to meet requirements as set forth in ASTM A-351-Grade CF8 (type 304) Standard Specification for “Austenitic Steel Castings for High-Temperature Service.”

Any requirements other than those set forth in ASTM A-351-Grade CF8 must be specified and known to the manufacturer prior to quotation of prices of products applicable to the project.

**TABLE 1 Chemical Requirements**

Element % (Max. Except Where Range is Given)	CF8.-CF8A Compatible to Type 304	CF3.-CF3A Compatible to Type 304L	CF8M Compatible to Type 316
Carbon	0.08	0.03	0.08
Manganese	1.50	1.50	1.50
Silicon	2.00	2.00	1.50
Sulfur	0.040	0.040	0.040
Phosphorus	0.040	0.040	0.040
Chromium	18.0 - 21.0	17.0 - 21.0	18.0 - 21.0
Nickel	8.0 - 11.0	8.0 - 12.0	9.0 - 12.0
Molybdenum	0.50	0.50	2.0 - 3.0
Columbium	—	—	—

**TABLE 2 Tensile Requirements**

	CF8	CF3	CF - 8M
Tensile strength, min. ksi (MPa)	70 (485)	70 (485)	70 (485)
Yield strength, min. ksi (MPa)	30 (205)	30 (205)	30 (205)
Elongation in 2 in. or 50 mm, min. %	35.0	35.0	30.0
Reduction of area, min. %	—	—	—