

**INTERNATIONAL ASSOCIATION OF PLUMBING
AND MECHANICAL OFFICIALS**

IAPMO GUIDE CRITERIA

FOR

NEUTRALIZING SUMPS FOR LABORATORY AND INDUSTRIAL WASTE SYSTEMS

IGC 94-95 (R2013)

1. PURPOSE

- 1.1** The purpose of this IGC is to establish a performance requirements, specific evaluation criteria and tests to ensure the safe and efficient collection and pretreatment of chemical wastes. Safe and efficient neutralization systems require that they protect personnel, buildings and equipment from exposures to the wastes in liquid or vapor form under normal and adverse conditions throughout the useful life of the facility. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote understanding regarding materials, manufacture.
- 1.2** The provisions of this IGC are not intended to prevent the use of any alternate material, provided any such alternate meets or exceed the intent of this IGC.

2. SCOPE

- 2.1** This IGC covers functional performance, physical strength and construction, chemical fill, health and safety, durability and maintenance. In addition, the IGC also covers marking requirements.

3. REQUIREMENTS

- 3.1** **Functional.** Neutralizing sumps shall provide a simple and effective means of neutralizing dilute acid wastes prior to discharge into drainage systems. Neutralizing sumps shall be available in a range of sizes to raise the pH of the acid waste by chemical reaction between the calcium and magnesium carbonate content of the sump fill and the entering acid. The pH is normally increased to between 4.5 and 7.0 depending the type, content and volume of the acid waste being treated.

3.2 Physical Strength And Construction

3.2.1 General Neutralizing sumps shall be made of ceramic shells complete with connections and dip pipe or fabricated from 1/4" (6.4 mm) mild carbon steel plate, factory lined with a thermoplastic sheet lining and stoneware lining. The exterior shall be protected with a corrosion resistant coating. Removable covers shall be provided to access the fill.

3.2.2 Ceramic Units. The sump body shall be formed of a dense acid-proof chemical stoneware, vitrified in one piece, complete with connections and dip pipe at a minimum of 2100°F (1149°C), with a chemical composition by weight of 63-68% SiO₂, 23-28% Al₂O₃, and an iron content of less than 1.5% as iron in combined form with no free iron.

3.2.3 Steel Units. The sump body shall be constructed of 1/4" (6.4 mm) plate mild steel prepared suitable for rubber type linings with all welds double butt, continuous full welded, non-porous, and ground smooth and having no crevices, offsets, or sharp edges. The bottom and side walls shall be lined with a 1/4" (6.4 mm) thermoplastic sheet lining fused directly to white metal sandblasted and primed steel surface and covered with a chemical stoneware acid proof ceramic lining laid in acid and alkali proof mortar.

Inlet and outlet bell sleeves and dip pipe shall be of chemical grade stoneware ceramic. The exterior of the steel shall be protected with a 45 mil minimum corrosion resistant coating applied to the sandblasted steel surface.

3.2.4 Additional Details. Walls shall be designed for an inside hydrostatic water pressure equivalent to the level of the outlet. Each tank shall be structurally designed to withstand all anticipated earth or other loads in accordance with accepted engineering practice.

Sumps and covers shall be designed for an earth load of not less than five hundred (500) pounds per square foot (23.94 KPa) when the maximum coverage does not exceed three (3) feet (0.9 m). Each sump and cover shall be structurally designed to withstand all anticipated earth or other loads and to be installed level and on a solid bed. Wood covers shall be prohibited.

Each such access opening shall have a leak-resistant closure (i.e. lid) that cannot slide, rotate or flip, exposing the opening when properly installed.

Manufacturer shall supply with each tank wither suitable manhole extensions or recommendations regarding suitable extensions where required.

Gaskets, when required, shall be of resilient material, resistant to attack by acids or alkalis that may be present in the waste and shall comply with the requirements of ASTM D 1056, Specification for Flexible Cellular Materials - Sponge or Expanded Rubber. Bolts,