

Material Definitions and Grate Loading Classifications

Definition of Terms

ACID-RESISTING EPOXY COATING (A.R.C.) is a baked-on powder coating which produces a smooth, hard, high-gloss finish. This epoxy-based coating offers high impact resistance and excellent life expectancy in all drainage applications.

GALVANIZING STEEL is a process of applying a coating of zinc to the finished sheet or fabricated parts to provide corrosion resistant properties. The coating is applied by hot dipping or electrolytic deposition.

POLYESTER is a thermosetting resin utilized to bond the individual fibers during the manufacture of molded fiberglass components. It provides high durability and excellent chemical- and weather-resistant properties.

POLYETHYLENE, HIGH DENSITY (HDPE) is a thermoplastic resin that offers excellent physical characteristics such as light weight, outstanding chemical resistance to household and industrial chemicals, good toughness, and 0% water absorption.

POLYPROPYLENE (PP) is a thermoplastic that offers excellent physical characteristics such as light weight, outstanding chemical and impact resistance, and 0% water absorption.

STAINLESS STEEL is any steel containing four or more percent chromium content. Chromium, along with other alloying elements like nickel and silicon, provides corrosion and heat resistant characteristics. Type 304 stainless steel is typical with 316 available as an option.

STAINLESS STEEL HARDWARE is used to secure steel angle frame to fiberglass trench for all Zurn Trench Systems.

VINYLESTER is a thermosetting resin utilized in the manufacture of molded fiberglass components. Its superior corrosion resistance in acidic and alkaline services, along with excellent impact and flexural fatigue resistance, make it ideal for hazardous chemical applications.

ZURN CAST IRON conforms to ASTM Specification for Gray Iron Castings A 48-83, Class 25. It is produced utilizing the latest equipment and newest developed foundry techniques. Zurn cast iron castings are characterized by a high degree of strength, corrosion resistance, workmanship, and finish.

ZURN DURA COAT is a specially formulated paint designed to resist cracking and chipping. Dura Coat is a latex-based coating developed to be used with cast iron substrates.

ZURN DURESIST is a ductile iron complying with ASTM Specification A 536-84, Grade 85-65-10. Its physical properties make it ideal for grates and drain components that are subjected to severe and heavy-duty service. Its chemical characteristics make possible a degree of corrosion resistance far superior to that of cast iron.

LLDPE (linear low density polyethylene) exhibits the following properties: excellent chemical resistance, low moisture absorption, extremely flexible, and very impact resistant.

Grate Top Loading Classifications

Two grate classification systems are shown to assist in grate selection. Both standards are used in the trench drain industry to choose the proper grating to meet loading requirements.

6.1 ANSI A112.21.1M

Grates and top rims shall be designed to meet the following loading classifications:

6.1.1 Light Duty – All grates having safe live load (as calculated in paragraph 6.1.6) under 2,000 lb. [900 kg] (i.e. Pedestrian).

6.1.2 Medium Duty – All grates having safe live load (as calculated in paragraph 6.1.6) between 2,000 lb. [900 kg] and 4,999 lb. [2,250 kg] (i.e. Light Vehicle).

6.1.3 Heavy Duty – All grates having safe live load (as calculated in paragraph 6.1.6) between 5,000 lb. [2,250 kg] and 7,499 lb. [3,375 kg] (i.e. H2O).

6.1.4 Extra Heavy Duty – All grates having safe live load (as calculated in paragraph 6.1.6) between 7,500 lb. [3,375 kg] and 10,000 lb. [4,500 kg] (i.e. Forklift).

6.1.5 Special Duty – Grates having safe live load (as calculated in paragraph 6.1.6) over 10,000 lb. [4,500 kg] shall be considered special and treated accordingly (i.e. Airport).

The maximum safe live load is computed by dividing the load at failure by two.

6.2 DIN 19580

Grates and top rims shall be designed to meet the following load classifications:

6.2.1 Classification A – Grate design load up to or exceeding 3372 lbf [15 kn] (i.e. Pedestrian).

6.2.2 Classification B – Grate design load of at least 28101 lbf [125 kn] (i.e. Light Vehicle).

6.2.3 Classification C – Grate design load of at least 56202 lbf [250 kn] (i.e. H2O).

6.2.4 Classification D – Grate design load of at least 89924 lbf [400 kn] (i.e. Pneumatic Forklift).

6.2.5 Classification E – Grate design load of at least 134885 lbf [600 kn] (i.e. Forklift).

6.2.6 Classification F – Grate design load of at least 202328 lbf [900 kn] (i.e. Airport).

In areas of extreme hard wheel forklift traffic (i.e. steel wheels), the Zurn -HD Frame Assembly is required.

Transportation Classifications

The American Association of State Highway and Transportation Officials' (AASHTO) "Standard Specification for Highway Bridges" defines H-20 loading as a two-axle truck with a maximum dual-wheel load of 16,000 pounds. HS-20 loading is defined as a tractor truck with a tandem axle semi trailer with a dual-wheel load of 16,000 pounds.

The FAA (Federal Aviation Administration) Advisory Circular AC 150/5320-6D describes aircraft loading as 100,000 pounds placed over a 9" x 9" area.

The Americans with Disabilities Act (ADA) stipulates that the slot width be limited on gratings in walkways and elongated slots must be placed longitudinally so they are perpendicular to the dominant direction of travel.