

## Safety Engineering Tables

TABLE 47-P

### SAFE BEARING LOADS ON SOILS AND ROCK (Values approximate pressures allowed in major city building codes)

| <i>Nature of Soil</i>                                                            | <i>Safe Bearing Capacity<br/>(Tons per sq ft)</i> |
|----------------------------------------------------------------------------------|---------------------------------------------------|
| Solid ledge of hard rock, such as granite, trap, etc                             | 25-100                                            |
| Sound shale or other medium rock, requiring blasting for removal                 | 10-15                                             |
| Hardpan, cemented sand and gravel, difficult to remove by picking                | 8-10                                              |
| Soft rock, disintegrated ledge, in natural ledge, difficult to remove by picking | 5-10                                              |
| Compact sand and gravel, requiring picking for removal                           | 4-6                                               |
| Hard clay, requiring picking for removal                                         | 4-5                                               |
| Gravel, coarse sand, in natural thick beds                                       | 4-5                                               |
| Loose, medium, and coarse sand, fine compact sand                                | 1.5-4                                             |
| Medium clay, stiff but capable of being spaded                                   | 2-4                                               |
| Fine loose sand                                                                  | 1-2                                               |
| Soft clay                                                                        | 1                                                 |

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TABLE 47-Q

### SPECIFIC GRAVITY OF GASES AND LIQUIDS (Gases at 32 F air = 1 000, liquids water = 1 000)

| <i>Gas</i>          | <i>Sp<br/>Gr</i> | <i>Gas</i>        | <i>Sp<br/>Gr</i> | <i>Gas</i>     | <i>Sp<br/>Gr</i> |
|---------------------|------------------|-------------------|------------------|----------------|------------------|
| Air                 | 1 000            | Ether vapor       | 2 586            | Methane        | 0 554            |
| Acetylene           | 0 920            | Ethylene          | 0 967            | Nitrogen       | 0 971            |
| Ethyl alcohol vapor | 1 601            | Helium            | 0 138            | Nitric oxide   | 1 039            |
| Ammonia             | 0 592            | Hydrogen fluoride | 2 370            | Nitrous oxide  | 1 527            |
| Carbon dioxide      | 1 520            | Hydrogen chloride | 1 261            | Oxygen         | 1 106            |
| Carbon monoxide     | 0 967            | Hydrogen          | 0 069            | Propane        | 1 554            |
| Chlorine            | 2 423            | Mercury vapor     | 6 940            | Sulfur dioxide | 2 250            |
| Ethane              | 1 049            | Marsh gas         | 0 555            | Water vapor    | 0 623            |

1 cu ft of air at 32 F and atmospheric pressure weighs 0 0807 pounds

| <i>Liquid</i>       | <i>Sp<br/>Gr</i> | <i>Liquid</i> | <i>Sp<br/>Gr</i> | <i>Liquid</i>   | <i>Sp<br/>Gr</i> |
|---------------------|------------------|---------------|------------------|-----------------|------------------|
| Acetic acid         | 1 06             | Fluoric acid  | 1 50             | Palm oil        | 0 97             |
| Alcohol, commercial | 0 83             | Gasoline      | 0 70             | Petroleum oil   | 0 82             |
| Ammonia             | 0 77             | Glycerin      | 1 26             | Phosphoric acid | 1 78             |
| Benzene             | 0 88             | Kerosene      | 0 80             | Rape oil        | 0 92             |
| Bromine             | 2 97             | Linseed oil   | 0 94             | Vinegar         | 1 08             |
| Carbolic acid       | 0 96             | Mineral oil   | 0 92             | Water           | 1 00             |
| Carbon disulfide    | 1 26             | Naphtha       | 0 76             | Whale oil       | 0 92             |
| Cotton-seed oil     | 0 93             | Olive oil     | 0 92             |                 |                  |

Mainly from Machinery's Handbook, 16th ed (The Industrial Press)

1 cu ft water at 4 C weighs 62 43 pounds