

FREIGHT WEIGHT

Measurement

Gross weight

Gross weight (countable and uncountable, plural gross weights) the total weight of a vehicle and its freight, fuel, passengers etc.

The gross weight includes all packaging materials of the product. At pallet level the product Gross Weight includes the weight of the pallet itself. For example, 200 GRM, value - total pounds, total grams, etc.

The word gross means total. Thus, gross weight means total weight. The gross weight will include all aspects required for shipping. It includes the actual product, its packaging and any other packaging required to enable the shipping of the product.

Different aspects will add up to the gross weight for each transport method

- Gross weight for air transport is calculated as the product weight plus the packaging weight plus the weight of the crew and passengers, fuel and aircraft.
- Gross weight for transport by road or rail is the product weight plus packaging (tare weight) plus vehicle or wagon's weight.
- Gross weight for transport by waterway is calculated as product weight and package or container weight (tare weight).

Weight Calculation

Gross weight = net weight + packaging/ container weight.

Net weight

Net weight (plural net weights) the weight of a product (especially food) without the weight of its packaging. The weight of a vehicle without that of its fuel, cargo, personnel etc.

Net weight refers to the weight of the raw product and does not include the weight of the products packaging or container. For example, the weight of sardines before being placed into tins. The net weight is equal to the gross weight minus the tare weight.

Net weight can also refer to the weight of goods that have been packed into a container but do not include the container's weight.

Weight Calculation

Net weight = gross weight – tare weight.

Volumetric Weight

The cost of transporting a shipment can be affected by the amount of space that it occupies on an aircraft, rather than the actual weight. This is the volumetric (or dimensional) weight.

The volumetric weight of a shipment is a calculation that reflects the density of a package. A less dense item generally occupies more volume of space, in comparison to its actual weight.

The volumetric or dimensional weight is calculated and compared with the actual weight of the shipment to ascertain which is greater; the higher weight is used to calculate the shipment cost.

Volumetric weight refers to the overall size of a parcel and is measured in volumetric kilograms. Volumetric weight can be calculated by multiplying the length, width and height of a parcel (in cm) and dividing that figure by 5000 (some carriers use a divisor of 4000).

Calculating Volumetric Weight

Volumetric weight is calculated by multiplying the length x height x width of a package and dividing the result by a volumetric factor.

That factor varies with the unit of measure. Since we use kilograms to calculate shipping charges, we use the following formulas to calculate volumetric weight:

- Multiply the parcel's three dimensions (length x height x width)
- If you are using centimeters then divide the result by 5000 (or 4000 for EU economy services).
- If you are using inches then divide the result by 305 (or 245 for EU economy services).
- The resulting figure represents the volumetric weight of your parcel

Chargeable weight

Chargeable Weight of Air Freight shipments are calculated as the Actual Weight (Gross Weight) or the Volumetric (also called Volume or Dimensional) Weight of the shipment, whichever is the greater. This uses an estimated weight that is calculated based on the dimensions (length, width and height) of a package (shipments are always shown in the order of L x W x H). Typically, large items with a light overall weight take up more space on an aircraft than a small, heavy item. That's why the Airlines charge according to Chargeable Weight.

Chargeable weight is commonly used by air freight forwarders, domestic motor carriers and brokers to calculate their air freight and/or domestic trucking charges. They use a dimensional factor to determine the "volume" or "volumetric" or "dimensional" weight of the cargo. The domestic air cartage motor carriers in the USA use a different dimensional factor than airlines which is listed below as well.

For those of you who simply want the formulas without a detailed explanation, here you go:

The formula for calculating the volume/dimensional weight for all commodities is 366 cubic inches per kilogram, 166 cubic inches per pound or 6000 cubic centimeters per kilogram.

Verified Gross Mass

The International Maritime Organization (IMO) has amended the SOLAS (Safety of Life at Sea) mandating the declaration of the Verified Gross Mass (VGM) of a packed container before loading on board vessels. VGM is a certified weight as obtained by one of the two methods (see below) and which represents the total gross mass of a packed container. The VGM must be sent by the customer before the VGM cut off. NOTE: Break Bulk, RoRo and Empties are out of the scope. Customer Calculation method

Calculating Verified Gross Mass

- 1) Weighing the packed container using calibrated and certified weighing equipment (e.g. weigh bridges, load cell sensing technologies etc.)
- 2) Weighing all packages and cargo items, including the mass of pallets, dunnage and other securing material to be packed in the container and adding the tare mass of the container to the sum of the single masses, using a certified method approved by the competent Authority of the country where the container is packed.

Tare weight

Tare weight sometimes called unladen weight, is the weight of an empty vehicle or container. By subtracting it from the gross weight (laden weight), the weight of the goods carried (the net weight) may be determined. This can be useful in computing the cost of the goods carried for purposes of taxation or for tolls related to barge, rail, road, or other traffic, especially where the toll will vary with the value of the goods carried (e.g., tolls on the Erie Canal). Tare weight is often published upon the sides of railway cars and transport vehicles to facilitate the computation of the load carried. Tare weight is also used in body composition assessment when doing underwater weighing.

Payload

Payload is the carrying capacity of an aircraft or launch vehicle, usually measured in terms of weight. Depending on the nature of the flight or mission, the payload of a vehicle may include cargo, passengers, flight crew, munitions, scientific instruments or experiments, or other equipment. Extra fuel, when optionally carried, is also considered part of the payload. In a commercial context (i.e., an airline or air freight carrier), payload may refer only to revenue-generating cargo or paying passengers.

For a rocket, the payload can be a satellite, space probe, or spacecraft carrying humans, animals, or cargo. For a ballistic missile, the payload is one or more warheads and related systems; their total weight is referred to as the throw-weight.