Calculations

Solid Waste Cleanup Program Weights and Volumes for Project Estimates

Description of Materials	Approximate Pounds/Cubic Yard	Remarks
Burn Dump Debris/Ash	800-1000 1500-1800 2300	Dry Loose Wet for Dust Suppression Wet mixed with soil
Construction Debris, Asphalt or Concrete: Loose	2400	
Construction Debris, Wood ; Uncompacted	400	Increase up to 100% if compacted using heavy equipment
Earth	2100 3000	Loose/Dry. Plus 30% when compacted. Excavated/Wet
Gravel or Crushed Stone Loose/Dry	2600	Increase 20% if wet
Household Trash	800	
Liquid Waste	1600	202 gal./cubic yard ~ 7 Lbs./Gal. E.g. Antifreeze, Waste Oil, Solvent
Metals, Un-compacted	600	e.g. Appliances, Metal Siding
Sand, Loose/Dry	2400	Increase 20% if damp and 30% if wet/compacted
Stone, Graded 8” max. Loose	2700	e.g. Gabion Construction. Increase 10% consolidated in place
Tire Burn Ash	500-800	
Tires, Auto and Pickup	220	Average 10 tires per cubic yard
Tires, OTR	See Remarks	Average 500 pounds per tire
Tires, Truck	480	Average 4 tires per cubic yard
Vehicles, Auto and Pickup	See Remarks	Use 3000 Pounds/Vehicle
Wood Chips, Shredded/Dry Wood Chips/Bark w/30% Soil	300 800	
Yard Waste (Vegetation) Loose	600	

Determination of Weights and Volumes of Onsite Materials

Volume

Pile volume can best be estimated by determining the area of the base and then multiplying by the average height of the pile. In many cases the base of a pile will resemble a rectangle where area is length times width (L x W). In other cases the pile may more closely resemble a triangle or other polygon. Use the appropriate geometry to calculate the base area. For average height, this usually must be estimated since often it is not prudent to climb a pile to get more exact height measurements. The height may be estimated by using a known reference (e.g., fellow inspector) for reference. Cubic yards can be determined by dividing cubic feet by 27. Depending upon the accuracy of the assumed measurements, the estimated volume could be within 10-15 percent of the actual volume.

Weight

The weight (tonnage) of a pile is determined by multiplying the volume by the density. CalRecycle's Solid Waste Cleanup Program has developed approximate pounds per cubic yard (lbs/cu yd) estimates for various materials. The actual density depends on the homogeneous nature (uniformity) of the pile in both void space and material type. Unless the entire pile can be visualized, it will be difficult to determine an accurate tonnage estimate. Please note that density values in the table are general (rough) estimates only and the actual density could be up to (or exceed) a factor of three (either larger or smaller) depending upon the actual density of the material.

Determination of maximum weights and volumes that can be received:

Tons permitted to be received per day x 30 days = Maximum amount on site at any one time

Helpful formulas:

___ feet high X ___ feet wide X ___ feet long = ___ cubic feet/27 cubic feet per cubic yard = ___ cubic yards

___ cubic yards X 27 cubic feet per cubic yard = ___ cubic feet = height X width X length

Example:

The pile is 20 feet high X 40 feet wide X 253.1 feet long. This equates to about 202,479 cubic feet/27 cubic feet per cubic yard = approximately 7500 cubic yards.

___ cubic yards X ___ pounds per cubic yard (waste conversion factor) = _____ pounds/2000 pounds per ton = _____ tons

___ tons X 2000 pounds per ton/pounds per cubic yard = ___ cubic yards X 27 cubic feet per cubic yard = height X width X length

Example:

7500 cubic yards of wood X 400 pounds per yard (unchipped wood debris) = 3,000,000 pounds/2000 pounds per ton = 1500 tons

Last updated: August 20, 2018
Construction and Demolition and Inert Debris Resources: https://www.calrecycle.ca.gov/SWFacilities/CDI/
Contact: Construction and Demolition PermitTraining&Assistance@calrecycle.ca.gov