



Calculating Your Waste Stream

Understanding the waste stream that your projects generate is the first step in minimizing waste and saving money. One complication of understanding the waste stream is using consistent units. Since drywall is far denser than cardboard, a dumpster full of drywall will weigh far more than a dumpster of cardboard. The following table presents useful conversion factors, adapted from the National Association of Homebuilders study.

Material	Pounds per Cubic Yard	Cubic Yards per Pound
Solid Sawn Wood	267	0.004
Engineered Wood	280	0.004
Drywall	400	0.003
Cardboard	30	0.033
Metals	150	0.007
Vinyl (PVC)	150	0.007
Masonry	1000	0.001
Paints, Caulks, etc.	167	0.006
Mixed Wastes	95	0.010

Economic Feasibility Tool

Evaluating volumes and recycling potential for construction waste recycling is an imperfect science. However, there are ways to estimate how much waste you have, and how much disposal is costing you, so you can evaluate its potential for reduction, reuse or recycling. Evaluating your construction waste stream can be a challenge. This is due to the various ways it can be measured - weight or volume. Both are acceptable methods, however, the numbers could be deceiving.

Take for example, cardboard and drywall. A cubic yard of cardboard will only weigh about 30 pounds while a cubic yard of drywall will weigh about 400 pounds. Therefore, a “full” 30 yard container filled with cardboard will only weigh about 900 pounds. A 30-yard container full of shingles or drywall will weigh 12,000 pounds.

The following table, adapted from National Association of Homebuilders (NAHB) and frequently cited by the EPA which adapted it from a NAHB research project is really very useful. The calculator converts the volume of materials into pounds. Understanding the waste stream requires us to use consistent units. Since drywall is far denser than cardboard, a dumpster full of drywall will weigh far more than a dumpster of cardboard. The following table presents the conversion factors which are utilized in the process.

Material	Pounds per Cubic Yard	Cubic Yards per Pound
Solid Sawn Wood	267	0.004
Engineered Wood	280	0.004
Drywall	400	0.003
Cardboard	30	0.033
Shingles	400	0.033
Vinyl (PVC)	150	0.007
Masonry	1000	0.001
Paints, Caulks, etc.	167	0.006
Mixed Wastes	95	0.010

Landfill fees are often charged per cubic yard (1 yard = \$7.00) or in some instances by pound (\$.03/lbs), so you may have to convert the waste composition data into pounds for ease in calculating potential from avoided disposal costs. To convert cubic yards to pounds, use the conversion factors in the table below:

As an example if a 30 yard container is estimated to be one third full of solid sawn wood (2"x4"s and 2"x6"s); then 10 (cubic yards) is multiplied by 267 (pounds) from the table to result in $(10 \times 267) = 2,670$ pounds of wood.

Further the same 30 yard container is estimated to be one third full of cardboard, then 10 cubic yards of cardboard is equal to $(10 \times 30) = 300$ pounds cardboard.

And the result is that the container is estimated to be two thirds full 2/3 of two materials whose combined weight in pounds is 2, 970 pounds.

Material	Cubic Yards	x	= Pounds
Solid Sawn Wood	10	267	2,670
Engineered Wood		280	
Drywall		400	
Cardboard	10	30	300
Shingles		400	
Vinyl (PVC)		150	
Masonry		1000	
Paints, caulks, etc.		167	
Other		95	
TOTAL	20		2,970

1. Potential Savings Calculation

The following example shows the estimated landfill savings derived from a project utilizing C&D recycling and/or reuse. In the example we use a \$10.00 per cubic yard fee for disposal, which is a relatively common charge in the H-GAC area. This fee does not include the placement and pickup charges that are frequently additional charges and can vary widely. You obviously will have to use the cost per cubic yard that is applicable to your location. You can make use of this calculator at the H-GAC website by entering your estimates of C&D waste volumes into the calculator.

Item	Total Cubic Yards	Waste Cubic Yards	Diverted Cubic Yards
No Recycling/Reuse			
Total Yards of C&D Waste		100	0
Land fill cost per cu yd(\$10)			
Total Cost			\$1,000
With Recycling/Reuse			
Total Yards	100		
Wood	40	0	40
Drywall	10	0	10
Cardboard	2	0	2
Shingles	13	0	13
Masonry	15	0	15
Other - mixed waste	20	20	
Land fill cost per cu yd (\$10)		\$200	\$800 cost savings

This estimate is a direct financial calculation of savings due to reduced landfill costs associated with reduced disposal needs. It provides a good rough estimate of potential savings and is the first step to preparing a C&D waste management plan. This estimate does not include the savings in landfill space (community/tax savings), nor does it include the money that could be derived from reselling items such as cardboard or wood.

It also does not include costs associated with employee/subcontractor training, material hauling, or time spent finding markets for recyclable materials. All of these factors will be weighed as a C&D waste management plan is developed. The calculation of this estimate for a particular company will likely indicate that a plan should in fact be developed to reduce material waste and reuse or recycle what cannot be avoided.