

General Laundry Planning Calculation Methods and Other Useful Utility Information

This sizing section has been developed to simplify your tasks of defining laundry equipment needs for your project.

The most accurate method of determining equipment size is to actually weigh soiled linens. As this is difficult for new projects, we have developed simple equations and guidelines to estimate the pounds of soiled linen per day.

Although the following formulas are proven, there are many factors that can alter the accuracy.

The largest variable when sizing laundry equipment is the cycle time. With the wide use of programmable controls, cycle times can vary from facility to facility. There are differences within UniMac's product line. The UW models have, on average, a 10 minute shorter cycle time than the value priced UC models. The following sizing formulas are designed for the faster UW models. All other models must allow for a smaller loads/hour rate.

GENERAL RULES

WASHER-EXTRACTORS

1. Small loads accumulate faster (keep the flow moving).
2. Two are better than one (if possible).
3. Size alike when using multiple washers (ease of training).

DRYING TUMBLERS

1. Rated capacity ratio to High G Force washers should be no less than 1.25:1. Use 2:1. Ratio with Low G Force washer extractors.
2. Most work flow problems are related to undersized drying tumbler capacity.

HOURS PER WEEK OF OPERATION OF LAUNDRY

7 Day Week - Use 49 Hours
6 Day Week - Use 42 Hours
5 Day Week - Use 35 Hours

LOADS / HOUR FACTOR

	UW Models	UC / UF Models
Heavy Soil	1.2 loads / hour	1.0 loads / hour
Normal Soil	1.5 loads / hour	1.2 loads / hour
Light Soil	2.0 loads / hour	1.5 loads / hour

Notes

Sizing Formulas and Information by Market

HOSPITALITY HOTEL/MOTEL

Formula

Pounds / Room	×	Rooms	×	Occupancy Factor	×	7 Days	÷	Hours / Week	÷	Loads / Hour	=	Pounds / Cycle
	×		×		×	7	÷		÷	1.5	=	

Pounds per **Room**

Type Property	Pounds per Room		Occupancy Factor
Budget Motel	8 pounds (3.6 kg)	Rooms only, no food service, no pool.	Less than 60%, use .80 Greater than 60%, use 1.0
Mid Range Hotel	10 pounds (4.5 kg)	Rooms, swimming pool, no food service.	
Full Service Hotel	12 pounds (5.4 kg)	Rooms, food service, pool, limited banquet.	
Luxury Hotel	14 pounds (6.4 kg)	Rooms, food service, pool, large banquets.	
Resort Hotel	16 pounds (7.3 kg)	Rooms, large volume restaurant, pool, banquets, golf, health club, etc.	

Example A 100-room mid-range hotel wants an on-premises laundry. Forecasted occupancy of 72%.

$$10 \times 100 \times 1.0 \times 7 \div 49 \div 1.5 = 95 \text{ lbs. / cycle}$$

Recommended Equipment:

- (2) UW60PV Washer Extractors
- (2) UTF75 Drying Tumblers

Section 4 - General Laundry Planning Calculation Methods

RESTAURANT/CLUB

Formula

Type of Covers	Pounds (Kilograms)/ Cover	×	Total Covers	×	Days	÷	Hours / Week	÷	Loads / Hour	=	Pounds (Kilograms) / Cycle
Restaurant Seats		×		×		÷		÷	1.5	=	
Banquet Seats		×		×		÷		÷	1.5	=	
Meeting Seats		×		×		÷		÷	1.5	=	
Total Pounds				×		÷		÷	1.5	=	

Pounds per **Cover**

Types of Covers	Napkin Only	Napkin & T/Cloth	T/Cloth Only	(Cover stands for one meal served)
Restaurant Seats	.11 lbs. (.05 kg)	.46 lbs. (.21 kg)	.35 lbs. (.16 kg)	
Banquet Seats	.11 lbs. (.05 kg)	.46 lbs. (.21 kg)	.35 lbs. (.16 kg)	
Meeting Seats			.35 lbs. (.16 kg)	

Hours Per Week of Operation of Laundry

Restaurants with 6 Day Week Use 24 Hours/Week (4 Hours/Day)
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Example:

This white tablecloth and napkin restaurant is open six days per week and serves 2,000 covers per week. The facility has seven kitchen staff uniforms per day. The total number of towels per week is 280.

Miscellaneous Items:

Towels 40 @ .18 lbs. (.08 kg) = 7.2 lbs. (3.26 kg)/day

Shirts 7 @ .40 lbs. (.18 kg) = 2.8 lbs. (1.27 kg)/day

Pants 7 @ 1.27 lbs. (.57 kg) = 8.9 lbs. (4.03 kg)/day

18.9 lbs. (8.56 kg)/day

Restaurant Seats: .46 (.20) × 333 × 6 ÷ 24 ÷ 1.5 = 25.5 (11.56)

Misc. Items: 18.9 × 6 ÷ 24 ÷ 1.5 = 3.2 (1.45)

Total lbs/cycle: 28.7 (13.02)

Recommended Equipment:

(1) UW35PV Washer Extractor

(1) UT050 Drying Tumbler

(1) IMPRESS 950 Flatwork Finisher

**HEALTH CARE/
NURSING HOME**

Formula:

Total Pounds per **Cycle**

Pounds (Kilograms) / Bed	×	Total Beds	×	7 Days	÷	Hours / Week	÷	Loads / Hour	=	Pounds (Kilograms) / Cycle
	×		×	7	÷		÷	1.2	=	

Pounds per **Bed**

Types of Beds	without Diapers & Pads	With Personals	*with Diapers & Pads
Assisted Care/ Home for Aged	1.2 lbs. (.54 kg)	2.7 lbs. (1.22 kg)	
Rehab Center	2.0 lbs. (.91 kg)	3.5 lbs. (1.59 kg)	
Intermediate Care	8.0 lbs. (3.62 kg)		10 lbs. (4.54 kg)
Skilled Care	10.0 lbs. (4.54 kg)		*12 lbs. (5.44 kg)

*Assumes 35% incontinency. Add 2 pounds (.91 kg)/additional 10% incontinency.

Example You are designing a 116 bed skilled nursing facility. It is projected to house 50% incontinency. Personal clothing will be done in this laundry.

$$15 (6.80 \text{ kg}) \times 116 \times 7 \div 49 \div 1.2 = 207 \text{ lbs. (93.89 kg)/cycle}$$

Recommended Equipment:

- (2) UW100 Washer Extractors
- (1) UW35 Washer Extractor
- (2) UT120 Drying Tumblers
- (1) UT050 Drying Tumbler

Section 4 - General Laundry Planning Calculation Methods

CORRECTIONAL FACILITIES

Formula:

Category	Item to be Washed	1 Change/Week	2 Changes/Week	3 Changes/Week	7 Changes/Week
A	Inmate's Clothing	2.2 lbs. (1 kg)	4.4 lbs. (2 kg)	6.6 lbs. (3 kg)	15.4 lbs. (7 kg)
B	Bed Linen	6.4 lbs. (3 kg)	9.7 lbs. (4 kg)	13 lbs. (6 kg)	26 lb. (12 kg)
C	Terry Goods	.7 lbs. (.3 kg)	1.4 lbs. (.6 kg)	2.1 lbs. (1 kg)	4.9 lbs. (2 kg)
D	Misc. Items	.6 lbs. (.3 kg)	.6 lbs. (.3 kg)	.6 lbs. (.3 kg)	1.6 lbs. (.7 kg)

(Category A + Category B + Category C + Category D)	×	Number of Inmates	÷	Hours / Week	÷	Loads / Hour	=	Pounds / Cycle
(_____ + _____ + _____ + _____)	×		÷		÷	1.2	=	

Example A 1200 inmate prison will have a central laundry planning to operate 5 days per week, 12 hours per day. Inmates will change uniforms three times per week and bed linen once.

$$\overset{A}{6.6} + \overset{B}{6.4} + \overset{C}{2.1} + \overset{D}{.6} = 16.7 \times 1200 - 60 - 1.2 = 278 \text{ (126.09 kg)}$$

Recommended Equipment:
 (3) UW100 Washer Extractors
 (3) UT120 Drying Tumblers

GENERAL LAUNDRY AND INDUSTRIAL PLANTS

Use this formula for projects that do not fit into any other classification.

Total Pounds / Day	×	Days / Week	÷	Hours / Week	÷	Loads / Hour	=	Pounds / Cycle
	×		÷		÷		=	

NOTE: Refer to miscellaneous weight chart on page 7 to complete the total pounds/day column.

GENERAL LAUNDRY PROJECTS

The best way to handle other types of laundries is to develop an accurate daily piece count for all items used. Linen service bills are excellent sources for this type of information. Use the chart below to apply piece weights and develop weekly linen volumes. Calculate washer-extractor requirements in the same manner as outlined previously.

Washer-extractor productivity factors should be applied to fit the washer models and soil levels involved.

TYPICAL DRY WEIGHTS OF SELECTED ITEMS

Item	Weight, lbs. / kg	Item	Weight, lbs. / kg
Apron (waitress)	0.09 / 0.04	Gown, patient's	0.64 / 0.29
Apron (bibbed)	0.45 / 0.20	Gown, surgical	0.90 / 0.41
Apron (waist)	0.36 / 0.16	Jacket (waiter)	1.40 / 0.64
Apron (shop)	0.69 / 0.31	Mop head	1.50 / 0.68
Bath mat (terry)	0.59 / 0.27	Napkin (20" x 20")	0.11 / 0.05
Bath mat (heavy)	1.35 / 0.61	Pants, cotton	1.27 / 0.58
Blanket (84" x 110")	4.20 / 1.91	Pillow case	0.32 / 0.15
Bedsread (84" x 118")	4.70 / 2.13	Sheet, King-size	2.25 / 1.02
Bedpad (60" x 76")	2.75 / 1.25	Sheet, Queen-size 90x108	1.90 / 0.86
Cap, chef's	0.07 / 0.03	Sheet, Regular double bed 81x108	1.75 / 0.79
Coat, laboratory	1.23 / 0.56	Sheet, Single (twin) bed 72x108	1.48 / 0.67
Coat, utility	2.50 / 1.13	Shirt, cotton	0.65 / 0.29
Coverall, lightweight	2.20 / 1.00	Smocks (blend)	1.11 / 0.50
Coverall, flame retardant	2.84 / 1.29	Smocks (cotton)	3.25 / 1.47
Coverall (freezer)	5.00 / 2.27	Table cloth (54" x 54")	0.70 / 0.32
Diapers (baby)	0.06-0.12 / 0.03-0.05	Table cloth (54" x 96")	1.35 / 0.61
Draw sheet 63x99	1.17 / 0.53	Table cloth (45" x 45")	0.53 / 0.24
Dress (uniform)	0.91 / 0.41	Table cloth (64" x 64")	0.98 / 0.44
Dust mop 36"	1.5 / 0.68	Table cloth, Banquet cover (54" x 120")	3.00 / 1.36
Fire station duty shirt	1.0 / 0.45	Towel, Hand (17" x 26")	0.18 / 0.08
Fire station workout sweat pants	0.8 / 0.36	Towel, Bath (24" x 44")	0.49 / 0.22
Fire station duty pants	1.5 / 0.68	Turnout gear bunker	5.0 / 2.27
Fire station workout sweatshirt	1.3 / 0.59	Turnout nomex hood	0.2 / 0.09
Gloves	0.5-0.75 / 0.23-0.34	Turnout gear coat	6.00 / 2.72
Gloves, cotton	0.50 / 0.23	Turnout gear gloves (leather)	0.8 / 0.36
Gloves, canvas	0.75 / 0.34	Wash cloth (12" x 12")	0.06 / 0.03

These figures are based on sample items. Weights of some brands and/or lots differ, so the figures should be used for reference only. Actual weights should be used whenever possible.