

**ROSINAIRE™ for drying, devolatilization, heating, calcining or cooling.**

**Features**

1. Thin-Layer operation without a bed of solids
2. Adjustable paddle orientation
3. Low gas flow rates  
...only for evaporation sweep...  
reduces exhaust gas energy losses
4. Multi-zone heat transfer jacket sections
5. Heat transfer fluid in stationary vessel walls only
6. Non-heated rotor design
7. No rotary joints
8. Conduction heating: separation of heat source from product
9. Mechanical agitation
10. Centrifugal action

**Benefits**

1. High evaporative mass transfer rates.  
High heat transfer coefficients:  
...typically 30-150 Btu/hr/ft<sup>2</sup>/°F
2. Variable residence times from 0.5-20 min.
3. High thermal efficiencies:  
...typically 1200-1400 Btu/lb.evap. water.  
Smaller gas handling equipment: fans, heat exchangers, cyclone, bag filter, scrubber, ductwork, etc.
4. Temperature range: 0-650°F possible
5. Eliminates product contamination from leaking rotor
6. Prolongs life of shaft seals and outboard bearings
7. Simple, safe, clean operation
8. Ideal for closed cycle operation with toxic substances or for solvent evaporation and recovery
9. Can handle wide particle size distribution
10. Delumps product material



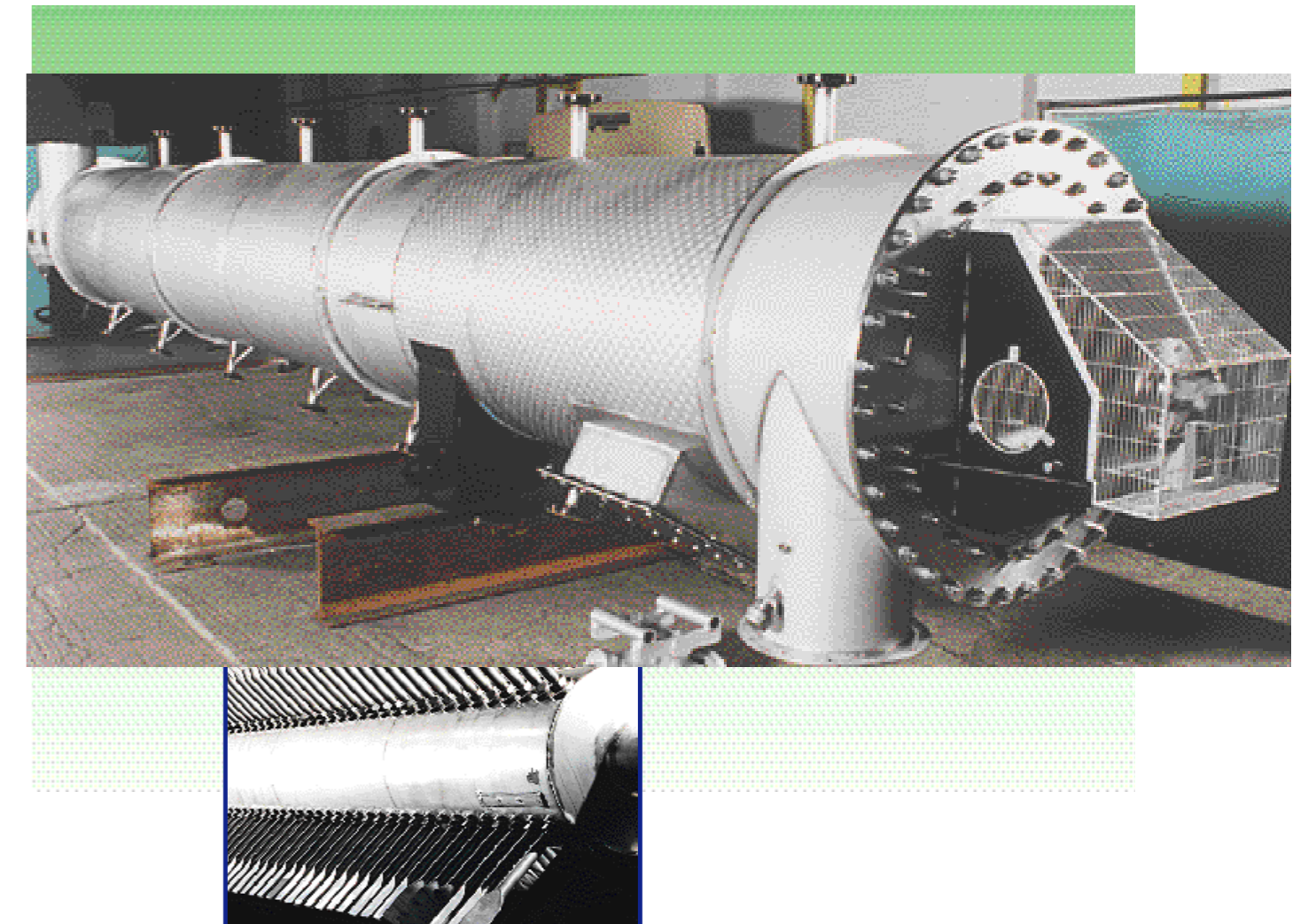
**Process Development Capability**

Barr-Rosin maintains extensive up-to-date test facilities in North America and Europe. Working with our customers we are able to help them develop new prototype products and technologies through preliminary bench scale feasibility tests and subsequent continuous pilot scale demonstrations.



**Barr-Rosin**

**ROSINAIRE™**



**SUITABLE PRODUCT APPLICATIONS**

POLYMERS		ORGANICS	INORGANICS	FOODS
Acetals	Polyketones	Adipic Acid	Alumina Gel	Aspartame
ABS	POM	Amino Acid	Calcium Carbonate	Bran
AMPS	PP	Cellulose Acetate	Catalysts	Cereals
FEP	PPO	CMC	Diatomaceous Earth	Chocolate Crumbs
PAN	PPS	Fumaric Acid	Glass beads	Corn meal
PC	PS	Herbicides	Gypsum	Farina
PE	PVA	Insecticides	Molecular Sieve	Flour
PET	PVOH	Methionine	Salts	Non-Dairy Creamer
PIA	SAP	MSG	Zeolites	
PMP	WSP	TPA and IPA		

**SUITABLE FEEDSTOCK FORMS**

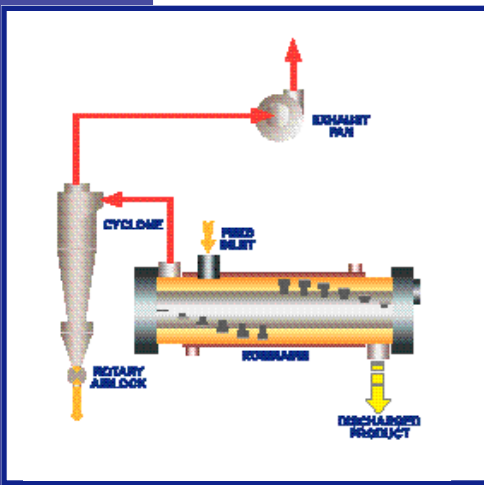
Pumpable Feeds	Non-Pumpable Feeds
Slurries • Pastes • Gels	Cakes ( Centrifuge or Filter ) • Crumbs • Granules Beads • Pellets • Powders • Short Fibers • Flakes



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[www.barr-rosin.ca](http://www.barr-rosin.ca)

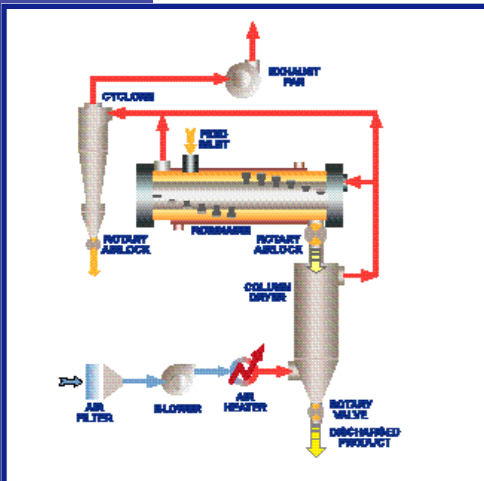


## Process Flow Diagrams

### Counter-Current Operation

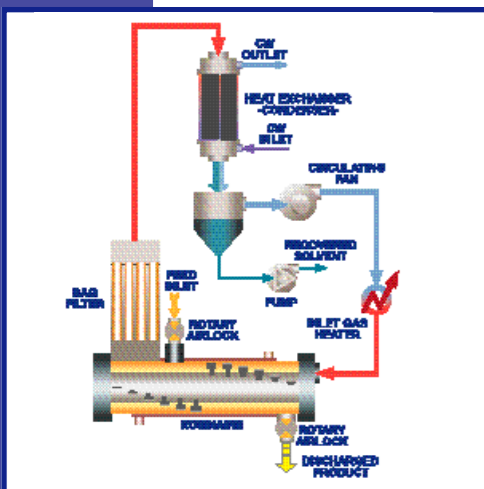
**Single Stage Drying-Open Cycle:**  
most common simple configuration

- ROSINAIRE™
- Cyclone with Rotary Airlock
- Exhaust Fan



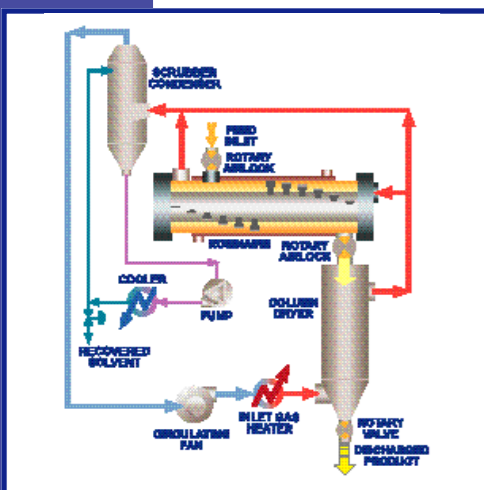
**2-Stage Drying-Open Cycle:**  
for very low final product moisture levels (ppm range)

- ROSINAIRE™
- Column Dryer with Rotary Valve
- Inlet Air Filter
- Inlet Air Blower
- Inlet Air Heater
- Cyclone with Rotary Airlock
- Exhaust Fan



**Single Stage Drying-Closed Cycle:**  
for solvent evaporation & recovery

- ROSINAIRE™ with Airlocks
- Bag Filter (integral with dryer)
- Heat Exchanger - Condenser
- Circulating Fan
- Inlet Gas Heater



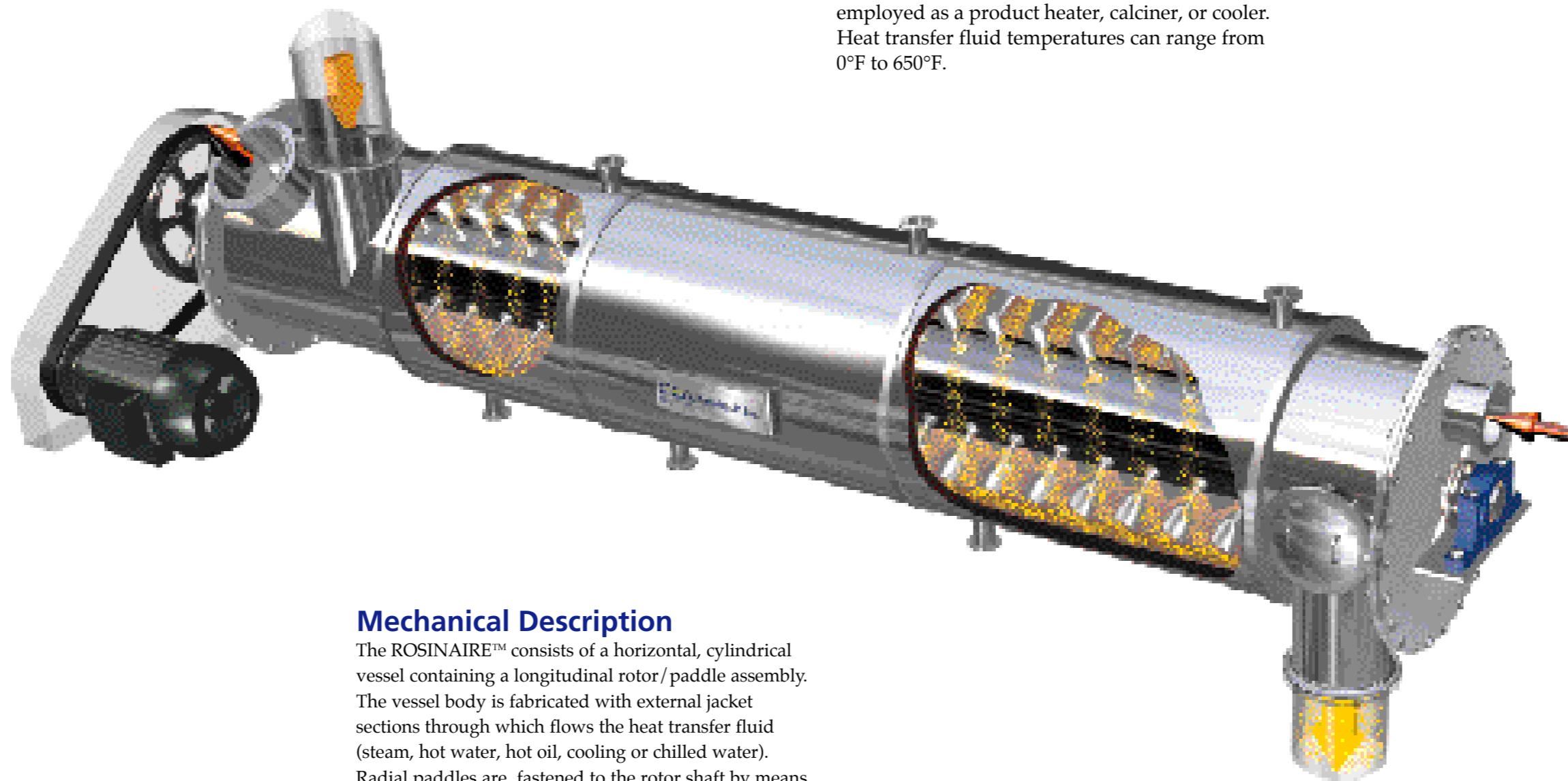
**2-Stage Drying-Closed Cycle:**  
typical of polymer resin drying

- ROSINAIRE™ with Airlocks
- Column Dryer with Rotary Valve
- Scrubber Condenser
- Circulating Fan
- Inlet Gas Heater

## Process Description

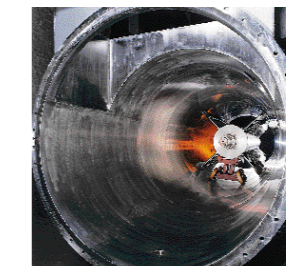
The feed material is pumped or conveyed into the ROSINAIRE™ vessel. The centrifugal action of the rotating paddle assembly throws the feed material to the inside wall forming a thin layer, which traverses the heat transfer surface in a helical flowpath. As solids are spiraled along the jacketed wall, heat is transferred by conduction and moisture is vaporized into the annular space. A counter-current flow of sweep air or inert gas is used to convey the evaporated material out of the ROSINAIRE™ dryer at the feed end. The dried product material is discharged tangentially as a dispersed curtain of free flowing solids.

The paddle orientation of the rotor assembly determines the helical pitch of the solids flowpath, thereby controlling the residence time within the ROSINAIRE™. The dispersed nature of the thin solids layer formed within the dryer results in intimate contact of the product material with the sweep gas, which increases evaporative mass transfer efficiency. The non-adiabatic nature of conduction heating increases the wet bulb temperature during evaporation, thereby allowing product material temperature to rise with increasing particle diffusion rates. The net result of all these factors is to produce a high quality product without thermal degradation effects at minimum cost. In addition to drying, the ROSINAIRE™ can be employed as a product heater, calciner, or cooler. Heat transfer fluid temperatures can range from 0°F to 650°F.



## Mechanical Description

The ROSINAIRE™ consists of a horizontal, cylindrical vessel containing a longitudinal rotor/paddle assembly. The vessel body is fabricated with external jacket sections through which flows the heat transfer fluid (steam, hot water, hot oil, cooling or chilled water). Radial paddles are fastened to the rotor shaft by means of locknuts. The orientation pitch of the paddles is adjustable in order to set the residence time of the solids within the vessel.



Internally smooth, cylindrical heat transfer surface without any baffle obstructions or discontinuities eliminates stagnation zones for product material hang-up and degradation.

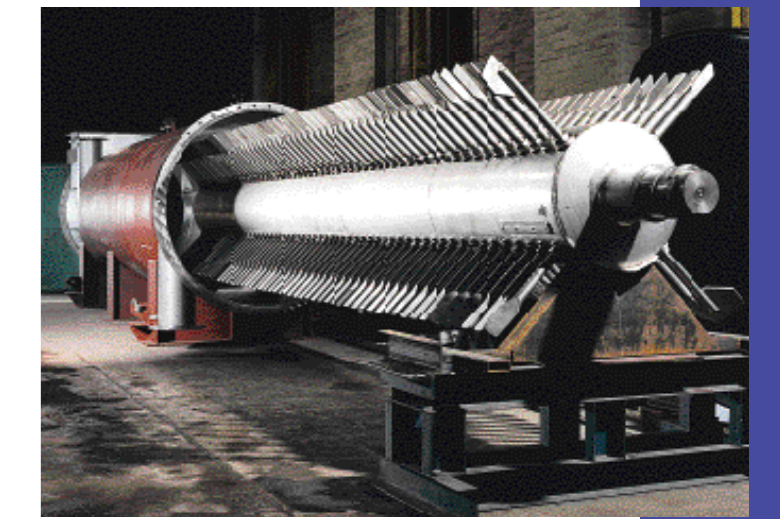


Table of Standard Sizes

ROSINAIRE MODEL NUMBER	NOMINAL DIAMETER		JACKET LENGTH		JACKET AREA		ROTOR SPEED				POWER			LAYOUT DIMENSIONS		
	mm	in	mm	ft	sq	sq	min/rev	max/rev	min/min	max/min	hp	hp	LENGTH	WIDTH	HEIGHT	
	mm	in	mm	ft	sq	sq	rpm	rpm	rpm	rpm	hp	hp	mm	mm	mm	
25-100-1.4	254	10	919	3.03	2.34	2.34	400	1050	2.2	3.5	2.96	4.05	506	405	506	
	10	6	15	0.05	15	0.05			2	4.0	116	16	20			
43-205-2.7	438	17	2040	6.71	2.71	2.71	250	660	2.3	11.2	42.63	559	311	311		
	16	10	40	0.15	40	0.15			5	15	169	22	29			
61-266-6.5	614	24	2656	8.74	6.5	6.5	120	460	3.5	27.2	52.4	1016	1016	1016		
	24	12	70	0.25	70	0.25			10	210	40	40	40			
61-402-7.9	614	24	4266	13.84	7.9	7.9	120	460	3.5	27.2	52.4	1016	1016	1016		
	24	14	65	0.35	65	0.35			10	224	40	40	40			
61-406-9.1	614	24	4076	15.99	9.1	9.1	120	460	3.5	27.2	65.2	1016	1016	1016		
	24	16	39	0.4	39	0.4			10	250	40	40	40			
76-427-9.6	762	30	4266	16.75	9.6	9.6	144	260	11.2	51.0	60.96	1219	1169	1169		
	20	14	40.5	0.45	40.5	0.45			15	240	40	40	40			
76-406-11.2	762	30	4076	15.95	11.2	11.2	144	260	11.2	51.0	67.96	1219	1169	1169		
	20	16	130	0.5	130	0.5			15	254	40	40	40			
76-610-12.9	762	30	6097	23.92	12.9	12.9	144	260	11.2	51.0	79.67	1219	1169	1169		
	20	20	130	0.55	130	0.55			15	252	40	40	40			
91-406-12.5	914	36	4076	15.95	12.5	12.5	180	230	14.3	34.6	62.2	1212	1221	1221		
	26	16	145	0.4	145	0.4			20	100	269	54	52			
91-610-15.2	914	36	6097	23.92	15.2	15.2	180	230	14.3	34.6	105.2	1212	1221	1221		
	26	20	190	0.45	190	0.45			20	100	217	54	52			
91-673-16.6	914	36	6707	26.59	16.6	16.6	180	230	14.3	34.6	166.1	1212	1221	1221		
	26	22	200	0.5	200	0.5			20	100	241	54	52			
107-406-15.0	1067	42	4076	15.95	15.0	15.0	100	260	22.4	34.6	62.4	1524	1432	1432		
	42	16	130	0.45	130	0.45			20	100	232	60	59			
107-673-17.0	1067	42	6707	26.59	17.0	17.0	100	260	22.4	34.6	102.2	1524	1432	1432		
	42	22	225	0.5	225	0.5			20	100	245	60	59			
107-796-26.0	1067	42	7917	26.026	26.0	26.0	100	260	22.4	34.6	298.2	1524	1432	1432		
	42	26	290	0.6	290	0.6			20	100	292	60	59			
122-549-20.4	1219	48	5496	20.449	20.4	20.4	100	260	22.4	32.2	76.96	1676	1636	1636		
	48	18	230	0.55	230	0.55			20	125	66	66	66			
122-796-29.7	1219	48	7917	26.344	29.7	29.7	100	260	22.4	32.2	101.25	1676	1636	1636		
	48	26	230	0.55	230	0.55			20	125	66	66	66			
122-915-24.4	1219	48	9146	24.291	24.4	24.4	100	260	22.4	32.2	112.54	1676	1636	1636		
	48	20	230	0.5	230	0.5			20	125	66	66	66			
127-549-23.2	1272	50	5496	22.217	23.2	23.2	90	240	29.3	111.8	102.6	1682	1660	1660		
	54	16	130	0.4	130	0.4			20	150	220	72	74			
127-915-26.6	1272	50	9146	24.274	26.6	26.6	90	240	29.3	111.8	112.96	1682	1660	1660		
	54	20	415	0.5	415	0.5			20	150	464	72	74			
127-1027-48.7	1272	50	10296	42.696	48.7	48.7	90	240	29.3	111.8	120.95	1682	1660	1660		
	54	24	430	0.6	430	0.6			20	150	512	72	74			
152-610-26.6	1524	60	6097	23.914	26.6	26.6	75	200	44.3	149.2	104.1	1991	2057	2057		
	60	20	230	0.5	230	0.5			20	200	252	76	61			
152-1027-49.2	1524	60	10296	42.652	49.2	49.2	75	200	44.3	149.2	122.06	1991	2057	2057		
	60	24	520	0.6	520	0.6			20	200	252	76	61			
152-1159-54.4	1524	60	11595	54.235	54.4	54.4	75	200	44.3	149.2	142.7	1991	2057	2057		
	60	26	595	0.65	595	0.65			20	200	266	76	61			
162-673-26.1	1629	64	6707	26.109	26.1	26.1	65	125	44.3	166.5	267.7	2296	2262	2262		
	72	22	430	0.55	430	0.55			20	250	292	90	92			
162-1067-50.4	1629	64	10670	60.417	50.4	50.4	65	125	44.3	166.5	129.19	2296	2262	2262		
	72	25	630	0.6	630	0.6			20	250	249	90	92			
162-1219-59.2	1629	64	12195	69.246	59.2	59.2	65	125	44.3	166.5	154.42	2296	2262	2262		
	72	40	345	0.75	345	0.75			20	250	609	90	92			
162-1272-56.1	1629	64	12719	76.036	56.1	56.1	65	125	44.3	166.5	169.73	2296	2262	2262		
	72	45	640	0.8	640	0.8			20	250	666	90	92			
212-792-46.2	2122	84	7917	46.224	46.2	46.2	50	100	56.7	222.4	109.22	2591	2667	2667		
	64	24	530	0.7	530	0.7			25	200	420	102	105			
212-1272-91.1	2122	84	12719	91.091	91.1	91.1	50	100	56.7	222.4	132.22	2591	2667	2667		
	64	45	390	0.9	390	0.9			25	200	692	102	105			
212-1524-101	2122	84	15242	101.216	101.2	101.2	50	100	56.7	222.4	169.99	2591	2667	2667		
	64	50	1090	1.0	1090	1.0			25	200	344	102	105			