

# RAYMOND® IMP™ MILLS

With a 130 years of experience, Raymond is a leader in the design and manufacture of industrial milling equipment and has set the standard in size reduction.

## FOR LOW COST GRINDING OF A WIDE VARIETY OF MATERIALS

Raymond Imp Mills: A versatile and dependable high speed airswept swing hammer impact mill designed for fine and medium grinding of soft non-metallic minerals, coals, various chemical compounds, food products and other materials. Capable of processing almost any solid material with a nominal 1 inch top size that is softer than 2 on the Mohs Scale can be effectively pulverized to a fineness from 1,000 microns to as little as 5 microns.

## Reliable Solutions

### IMP MILL SYSTEM

The typical Raymond imp mill system can be configured in a number of ways, it's capable of simultaneously pulverizing, classifying, flash drying, flash calcining and beneficiating various materials. Available in six sizes with capacities from 250 to 40,000 lb/hr.

### DEPENDABILITY

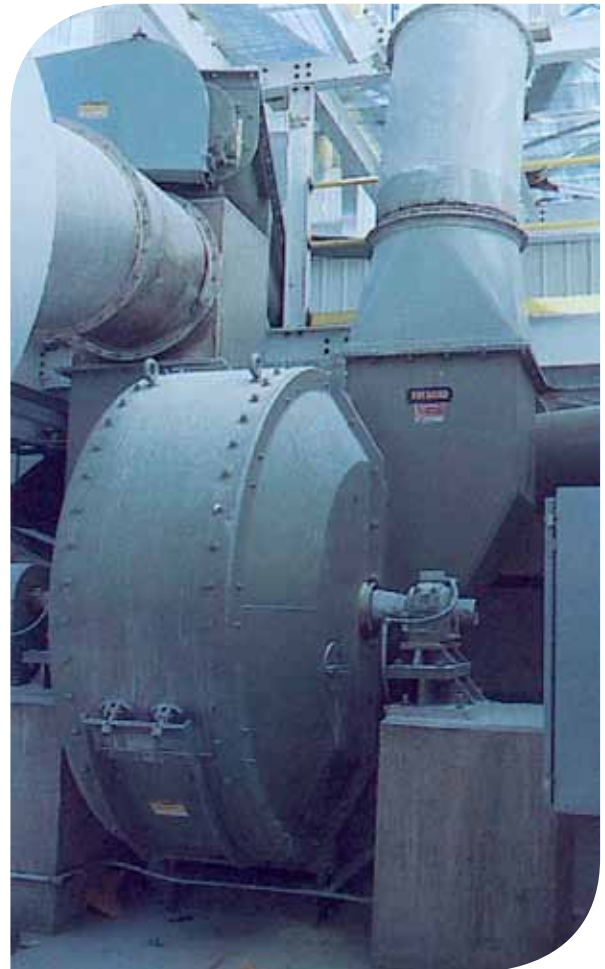
The Raymond imp mill features heavy-duty all-welded plate construction designed to provide the kind of 24-hour-a-day dependability and long life that our customers have come to rely on.

### CUSTOM ENGINEERED SYSTEMS

Each imp mill system is custom designed to achieve the best solution for your processing application. The mill, feeder, classifier, fan, cyclone, dust collector and other system components are selected to meet the requirements and characteristics of the material processed.

### EXPERIENCE

Raymond pulverizing and classification equipment has been setting the standards in size reduction since 1887, serving many types of mineral processing industries. Our portfolio includes not only the Raymond Imp Mill but the Raymond Roller Mill, Raymond Bowl Mill, Raymond Vertical Mill, Raymond Ultra Fine Mill and others.



## Providing Full Scope of Services to Our Customers

Raymond is known for its reliable size reduction and classification equipment by customers worldwide. Our product line is supported by our engineering and field service departments to ensure the highest level of customer satisfaction, while delivering the reliability and high level of performance that today's industrial applications require.

### STANDARD IMP MILL SYSTEM

The Raymond Series 3 Imp Mill system is the ideal solution to many size reduction applications. A typical system consists of the imp mill with either rotary or vibratory feeder, elevated in-stream classifier, system fan and cyclone. This basic configuration has proven itself time and again.

### IMP MILL SYSTEM WITH FLASH DRYING

Various materials contain free water in the form of moisture that has to be removed in order to increase the value of the pulverized material and allow it to be handled more efficiently. The imp mill system has the flexibility to pulverize and dry the material simultaneously.

The mill system with flash drying requires waste heat or a source of heated air. The heated air is used to flash dry the material as it is pulverized and swept from the mill. Depending on the initial moisture content of the feed, a portion of the dried product may be combined with moist material in a double paddle mixer. This "conditioned" feed is easier to handle and is more efficiently dried and pulverized. A vent is provided to remove a portion of the moist air returning the balance to the system where it is mixed with fresh, hot air from the air heater.

### IMP MILL SYSTEM WITH FLASH DRYING

In addition to free moisture, some materials, such as gypsum, contain chemically bound water that must be removed in order to change the physical characteristics of the material. This process, known as calcining, can be easily accomplished with the imp mill system.

Essentially similar to the imp mill system with flash drying, the imp mill system with flash calcining is provided with a number of special features which make it suitable for the higher temperatures involved.



### AIRFLOW AND POWER REQUIREMENTS FOR RAYMOND IMP MILL SYSTEMS

Mill Size	Nominal Airflow*		Fan Power		Mill Power - Min		Mill Power - Max		Turbine Power	
	acfm	m <sup>3</sup> /hr	hp	kW	hp	kW	hp	kW	hp	kW
13	1,000	1,700	7.5	5.5	20	15	25	19	5	4
43	3,000	5,100	20	15	30	22	75	55	15	11
53	6,000	10,200	40	30	50	37	150	110	25	18
63	12,000	20,400	75	55	125	93	250	185	50	37
83	25,000	42,500	150	110	300	223	500	375	100	75
103	36,000	61,200	250	185	400	315	900	800	125	90

\*Airflow for many applications will exceed nominal values

## DESIGN FEATURES

**Heavy-duty construction** - housing and bases feature heavy gauge steel plate construction for structural rigidity, long service life and the mass required to ensure smooth performance.

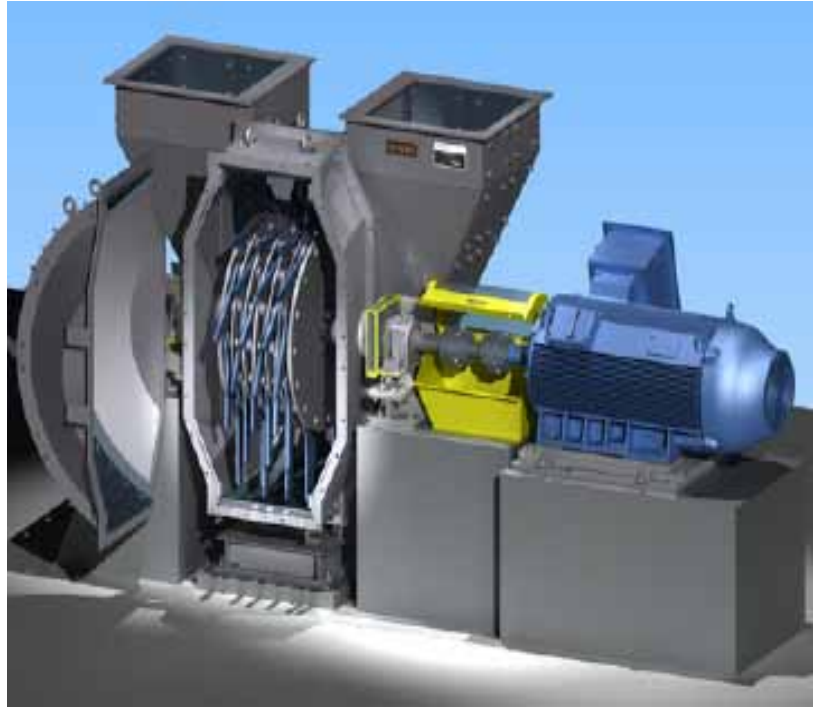
**Housing liners** - mill housings fitted with bolt-on replacement liners, available in a variety of alloys.

**Bearings** - cast iron split pillow block with self-aligning spherical roller bearings.

**Hammers** - available in various shapes and materials to assure maximum grinding action and efficiency.

**Housing** - split housing design provides quick access to mill interior, reducing maintenance costs and lost production.

**Hammer disk/rotor assembly** - constructed of heavy gauge steel plate with abrasion resistant liners, mounted on a hot-rolled steel shaft and electronically balanced at high speed for smooth operation, long life and the inertia to absorb heavy impact.



## SYSTEM FLEXIBILITY AND OPTIONS

**Hammer configuration** - a variety of hammer types are available to ensure maximum flexibility. By varying the number and position of the hammers on the hammer disks, a rough degree of fineness variation can be obtained, which is later “fine tuned” by adjusting the setting of the classifier.

**Material of construction** - a selection of materials of construction is available to ensure long life and efficient operation with a wide variety of abrasive and corrosive materials, or for applications that require special treatment. These materials can be incorporated into the mill’s housing, shaft, housing liners, hammers and hammer disks, as well as ductwork and classifiers. They include abrasion resistant steels, stainless and other corrosion and heat resistant alloys, special overlays, coating and liners.

**Product collection** - high efficiency cyclone collectors are supplied to separate the entrained pulverized solid particles from the airstream. Air exiting the cyclone is normally recirculated to the mill, with a small portion vented to a secondary collector, usually of the fabric filter type, or the full air stream may be directed to the secondary collector.

**Integral and instream classifiers** - When operated in closed circuit with an elevated instream classifier, oversized particles are continuously returned to the grinding chamber until they are reduced to the required fineness. This not only provides good particle size control, it also improves the mill’s grinding efficiency.

A variety of classifiers that can meet the requirement of almost any application are available for the imp mill system, i.e., double cone, twin cyclone, top drive whizzer and turbine classifier.

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## NOMINAL CAPACITY OF IMP MILL-STPH

Material	Moisture		Fineness		Mill Size					
	Initial - %	Final - %	% passing	mesh	13	43	53	63	83	103
Bark	57	45	90	8	.05	1.4	2.8	4.5	9.0	14
Calcium Carbonate	30	0.5	99	325	0.5	1.5	3.0	5.0	10	15
Clay, Ball	25	2	90	200	1.0	2.7	5.4	9.0	18	27
Gypsum (FDG calcining)	21	5.5	75	325	1.3	3.5	6.7	13	28	40
Gypsum (Natural calcining)	21	5.0	70	325	1.2	3.1	6.0	12	26	36
Gypsum (Waste)	-	-	90	100	0.8	1.7	3.8	7.5	15	23
Kaolin Clay	15	1	99.9	325	1.6	4.5	9.0	15	30	45
Soy Flour	-	-	95	100	0.8	2.0	4.0	7.0	14	21
Soy Protein	73	8.0	50	100	0.1	0.2	0.4	0.8	1.5	2.3
Talc	15	0.2	99.5	325	0.7	1.8	3.6	6.0	12	18
Wood Waste	55	30	85	10	0.5	1.5	3.0	5.0	10	15

## IMP MILL FLASH CALCINING SYSTEM

