



# Essa® Pulverising Mill Bowls

Essa® Pulverising Mill Bowls are a high-production, high-capacity bowl – 50 to 5000 cc nominal capacity – that are a world-leading unique range and proven performer for over 30 years.

## Benefits

- Proven performer: we are world leaders, with our bowls being used by most commercial assay laboratories and many leading global exploration and mining companies.
- Reduced operating costs: global availability and consistent supply due to our large-scale manufacturing process and efficient distribution network mean cost benefits for you.
- Improved sample quality: a certified laboratory tests every batch of steel used in our manufacturing process, minimising the risk of unexpected contamination and improving the certainty of final analysis.
- Full traceability: every bowl and grinding element is stamped with a serial number that cross-references to a 34-element steel analysis report.
- Longer bowl life: all bowls are through-hardened to prolong operational life and to reduce sample contamination.
- Guarantee of performance: FLSmidth's bowl warranty policy provides a pro rata credit for any premature bowl failure.
- Versatility: using a standard low cost spacer ring allows bowls from 50 cc to 2000 cc capacity to be used in a Essa LM2 and LM201 Pulverising Mills.
- Reduced safety risks: heavier bowls and grinding elements are compatible with simple pneumatically actuated lifting devices (Millmates). This reduces the manual effort required when moving them between the mill and workstation.

# Maximum productivity and long bowl life

## The preferred bowl of choice across the world

The Essa Pulverising Mill Bowl range has the 'bowl and disc' style grinding head forming its core, and is the preferred bowl of choice in most of the world's leading commercial assay laboratories. These bowls are available in 800, 1000, 2000 and 5000 cc nominal capacities and are of through-hardened steel construction for guaranteed optimum life.

Essa 'ring and roller' style bowls, also of through-hardened steel construction, are available in 50, 100, 125, 300 and 400 cc nominal capacities, with tungsten carbide available in the 125 cc size.

These styles of pulverising mill bowls are the most frequently used because of high sample throughput, a comprehensive range of available bowl sizes, narrow particle size distribution of the pulverised material and ease of cleaning.

## Efficient design

We offer 'bowl and disc' type bowls where rapid reduction of large sample masses, together with an homogenising action, provide improved sample quality and increased productivity. There are fewer moving parts and therefore fewer pieces to clean because of the incorporation of a single grinding element. The 'ring and roller' bowls are traditional-style bowls which are easy to handle and suit smaller sample masses where a very fine product is required.

Our bowl range is fully compatible with all FLSmith-manufactured Essa Pulverising Mills. The proven quality of our bowls is reflected in our warranty and quality assurance programme to ensure our customers can rely on our grinding bowl performance.

## Unbeatable performance

The large-capacity 'bowl and disc' bowls typically have the ability (when used on an Essa Pulverising Mill) to reduce ores, minerals, metallurgical samples, ceramics, soils, aggregates, chemicals and similar particulates to a nominal 0.075 mm product in approximately three to five minutes. Correct preparation is critical to obtaining meaningful analytical data. Our large capacity bowls allow for the production of a suitably-blended sub-sample for accurate analysis.

The 'ring and roller' range typically is capable of producing an even finer product in approximately one to three minutes. The usable capacity of each bowl will generally be 60% to 80% of its nominal capacity.

The performance expectation of all bowls is subject to the physical characteristics of the sample being milled and the final particle sizing required.

## Improved certainty of final analysis

All devices used in the crushing and pulverising of geological samples can impart trace levels of contaminants to the samples for analysis. Essa Pulverising Bowls are supplied in two steel types: Standard Steel and Chrome Steel. Chrome Steel generally has better wear properties whereas Standard Steel is a low chrome steel used when chromium contamination may be an issue.

Standard Steel is often the preferred material of choice for pulverising vessels in commercial laboratory operations as the chrome and iron contamination is usually negligible compared to the levels commonly encountered in most geological materials. Every batch of steel used in our manufacturing process is tested by a certified laboratory to minimise the risk of unexpected contamination and to improve the certainty of final analysis.

## Steel bowls: typical analysis




Grinding Bowls and elements are manufactured from steel having the following **maximum** levels of minor and trace elements.

	Standard Steel	Chrome Steel
Element	Max Level	Max Level
Au	2.0 ppm	0.05 ppm
Ag	10 ppm	1.0 ppm
Bi	10 ppm	10 ppm
Cd	10 ppm	10 ppm
Co	2000 ppm	300 ppm
Cu	5000 ppm	2500 ppm
Cr	2500 ppm	14 %
Mg	2000 ppm	1000 ppm
Mn	2.0%	7500 ppm
Mo	1.0%	2500 ppm
Ni	5000 ppm	4000 ppm
Pb	2000 ppm	25 ppm
V	1.0 %	1500 ppm
Zn	2000 ppm	500 ppm

Every batch of steel used in the manufacturing process of mill bowls and grinding elements is tested by a certified laboratory. The serial number, stamped onto each bowl and grinding element, cross-references to an analytical report.

# Proven performance for over 30 years

FLSmidth pioneered the development of large capacity pulverising in the mid-1980s. An experienced and trusted bowl manufacturer, we have developed a range of bowls featuring consistent and reliable steel composition in styles to suit almost every laboratory application.

Model #	Compatible Mill	Recommened Sample Mass	Grinding Element	Steel Available	
B5000		LM5 (fixed)	1000 to 3500 g	Single Disc	Standard and Chrome
B2000		LM2, LM201	300 to 1600 g	Single Disc	Standard and Chrome
B1000		LM2, LM201 (requires spacer ring)	150 to 800 g	Single Disc	Standard and Chrome
B800		LM2, LM201 (requires spacer ring)	120 to 640 g	Single Disc	Standard and Chrome

Model #	Bowl Weight	Disc Weight	Lid Weight	Bowl Internal Diameter	Bowl Internal Height
B5000					
	34.0 kg	21.5 kg	5.0 kg	309 mm	137.5 mm
B2000					
	12.5 kg	11.6 kg	3.5 kg	258 mm	93 mm
B1000					
	8.8 kg	8.1 kg	3.1 kg	240 mm	65 mm
B800					
	6.4 kg	5.0 kg	2.3 kg	210 mm	65 mm

# Premium-quality ring and roller sets

Model #	Compatible Mill	Recommended Sample Mass	Grinding Element	Steel Available
<b>B400</b> 	LM2, LM201 (requires spacer ring)	75 to 320 g	Ring and Roller	Standard and Chrome
<b>B300</b> 	LM2, LM201 (requires spacer ring)	75 to 240 g	Rings and Roller	Standard and Chrome
<b>B125</b> 	LM2, LM201 (requires spacer ring)	25 to 100 g	Ring and Roller	Standard and Chrome
<b>WC125</b> 	LM2, LM201 (requires spacer ring)	25 to 100 g	Ring and Roller	Tungsten Carbide
<b>B100</b> 	LM2, LM201 (requires spacer ring)	25 to 80 g	Ring and Roller	Standard and Chrome
<b>B50</b> 	LM2, LM201 (requires spacer ring)	5 to 40 g	Roller	Standard and Chrome

Model #		Bowl Weight	Roller Weight	Ring Weight	Lid Weight	Bowl Internal Diameter	Bowl Internal Height
B400		6.0 kg	2.5 kg	2.4 kg	2.2 kg	200 mm	47 mm
B300		6.0 kg	1.7 kg	Inner 1.7 kg Outer 2.3 kg	2.2 kg	200 mm	47 mm
B125		3.8 kg	1.5 kg	1.5 kg	1.2 kg	140 mm	59 mm
WC125		7.3 kg	2.1 kg	1.9 kg	3.7 kg	120 mm	44 mm
B100		3.6 kg	1.5 kg	1.5 kg	1.2 kg	140 mm	50 mm
B50		0.9 kg	0.5 kg	n/a	0.3 kg	65 mm	37 mm