



## silicon powder chem.:Si

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No. 100230

Industry: Chemistry

1	<b>PULVERISETTE 7 classic line (speed: 800rpm)</b>					
	12ml bowl made of zirconium oxide (ZrO <sub>2</sub> ) + 20g 1mm ZrO <sub>2</sub> balls					
	Amount	Feed size	Additive	Duration	Result	Documentation
	1g	< 40µm*2	+ 4g Octodecene*1	15min*3	d50< 1,9µm*4	see attachments
*1: Octodecene was provided and requested for grinding by the costumer. With a boiling point of ~179°C is suitable for grinding silicon. *2: See our partice size analysis of the original sample with ANALYSETTE 22 NanoTec, on Meas.No 10568 on separate page. *3: Pure silicon is well known for building up a huge pressure while grinding. For avoiding overpressure inside of the bowl we grinded in steps of 1 minute, followed by 15 minutes of programmed pausing time for cooling. This counts for all further grinding trials too. *4: The fineness after 15 minutes of grinding did not improve compared to 5 minutes of grinding, therefore, a longer grinding with 1mm balls is not recommended. See our particle size analysis after 15 minutes of grinding with ANALYSETTE 22 NanoTec, on Meas.No 100664 on separate page.						

2	<b>PULVERISETTE 7 premium line (speed: 1100rpm)</b>					
	20ml zirconium oxide (ZrO <sub>2</sub> ) bowl + 30g 1mm ZrO <sub>2</sub> balls					
	Amount	Feed size	Additive	Duration	Result	Documentation
	1g	< 40µm	+ 4g Octodecene	120min*1	d50 <100nm*2	see attachments
*1: Because the first grinding trial has shown that the pressure inside of the bowl stayed low, we grinded for 2 minutes with a programmed pausing time of 12 minutes without any problems. Eventually, even longer grinding times are realisable. *2: The comparison of grinding results after 5 and 15 minutes shows a big advantage of the PULVERISETTE 7 premium line compared to the classic line model. See our particle size analysis after 2 hours of grinding with ANALYSETTE 22 NanoTec, on Meas.No 100609 on separate page. The particle size distributions of the original sample and the 15 minute trials have been calculated by Fraunhofer. Afterwards, for a more precise result, Mie theory was used. A third trial with a change of balls after 30mintes to 0,1mm balls did not improve the result.						