

# Nozzles for Electromagnetic Encapsulation Units with Sapphire



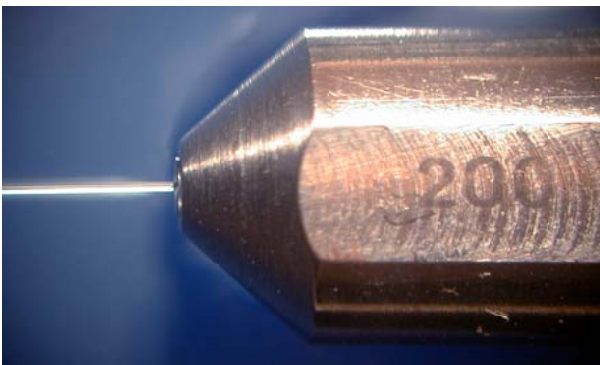
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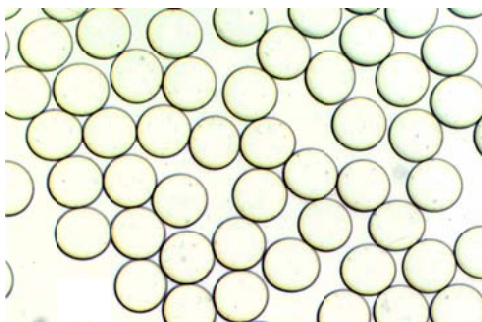
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The nozzle holder is made of stainless steel 1.4435 (AINSI 316L). For the nozzle itself we use a polished sapphire. The reason for this you see in the next picture: Just look at the perfect surface of the hole and compare it with the stainless steel surface! The manufacturing of such perfect sapphire nozzles is based on the renowned Swiss watch maker tradition, which helps us to reach this perfectly smooth surface. This is essential for the generation of an absolutely perfect laminar jet as shown below.



Make your own opinion about the quality of beads that you can generate by using Nisco Microencapsulation Systems.



2% Alginate (Sigma, low viscosity), sterile filtered

Diameter D (µm)	Hole Surface (µm <sup>2</sup> )	Typical flow rate per nozzle (ml/min) 3)	Note
100	7854	1.1	1)
120	11310	1.6	2)
130	13273	1.9	2)
150	17671	2.5	2)
170	22698	3.2	2)
180	25447	3.6	2)
200	31416	5	1)
250	49087	7.8	2)
300	70686	8.5	1)
350	96211	11.6	2)
400	125664	16	1)
450	159043	20.3	2)
500	196350	24	1)
550	237583	29	2)
600	282743	35	1)

- 1) restricted amount on stock
- 2) non stock items will be produced on order
- 3) typical for low viscosity alginate (2%)

### Some technical details:

The hole of the sapphire is drilled with a laser. Thereafter it is polished with a special tool. The smallest polishing tool fits into the 100mm hole. Thus for manufacturing reasons the 100mm nozzle is the smallest available with the sapphire technology.

The nozzles are produced in two different shapes:

- one for the single nozzle Nisco Encapsulation Units VAR A, B and D
- and another shape for the Nisco multiple nozzle systems such as VAR C and E.

The sapphire is mounted without inherent tension. The nozzle can be autoclaved, steam sterilised at 2 barg and is resistant against most chemicals.