



PIPAC – PRESSURIZED INTRAPERITONEAL AEROSOL CHEMOTHERAPY

PITAC – PRESSURIZED INTRATHORACIC AEROSOL CHEMOTHERAPY

MCR-4 TOPOL®

The disposable, minimally invasive **second-generation** surgical atomizer has been specially developed for the most challenging clinical areas of pressurized intraperitoneal and intrathoracic chemotherapy.

PREMIERE FEATURES OF second-generation MICRO-ATOMIZERS

Compared to their predecessors, second-generation surgical micro-atomizers are characterized by:



High-safety construction and design:

- with diameter reduced to 8 mm,
- smooth shape without interfering transition elements,
- ergonomic and safe grip,
- presence of aerosol residue drain hose.

High reliability and durability:

- integrated particulate filter,
- composite and homogeneous mechanism,

Modified spray parameters:

- wider range of pressure levels,
- increased spray angle,
- increased particle size and weight,
- higher droplet velocity,
- enhanced droplet impact,
- increased spray stability,
- faster dosing.

INCREASED SAFETY of CONSTRUCTION AND DESIGN

The unique patented technology for the production of a corrosion-resistant steel composite with a diameter of 8 mm with a smooth body surface and without interfering structural elements guarantees the safest and most hygienic compatibility in the space-challenging environment of minimally invasive surgery. The smooth body of the **MCR-4TOPOL®** micro-atomizer enables safe and comfortable passage through the trocar. The advantage of the smooth surface is that it allows the insertion of a disposable aerosol residue drain hose, which is included in each sterile package. The drain tube is compatible with all surgical aspirators of carcinogenic aerosols featuring a 22 mm diameter filter inlet.

The **MCR-4TOPOL®** micro-atomizer is equipped with an element for the most comfortable, ergonomic and secure grip.

PATENT: A61M5/307 Minimally invasive surgical nozzle, especially for invasive surgery;

REGISTRATION NUMBER: 34539



INCREASED RELIABILITY AND DURABILITY

Presence of an integrated safety particle filter with a particle trapping capacity of **0.1 mm** or more. Compared to the first generation, this measure reduces the risks of device failure associated with obstruction of the nozzle orifice by an accidental particle.

The internal system of the micro-atomizer is exclusively made of high-quality, corrosion-resistant elements. **MCR-4 TOPOL®** is characterized by its absolute integrity. No moving parts, such as a pin, hub, spring, rubber seals or various systems of glued threads, are required for its activity.

“The absence of these elements is a basic prerequisite for the successful design of precisely defined properties of the **MCR-4 TOPOL®** micro-atomizer spray.”





MODIFIED SPRAY EFFICIENCY

The **MCR-4 TOPOL®** micro-atomizer spray design is based on the extended requirements of mechanical engineering for determining the parameters of atomizing nozzles. Specifically, in the field of fluid mechanics.

OPERATING PRESSURE RANGE

Second-generation micro-atomizers enable efficient operation in the pressure range of 100-330 psi.

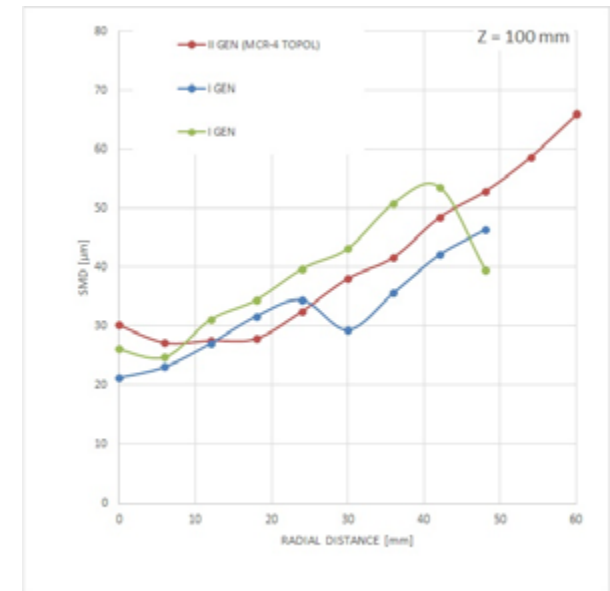
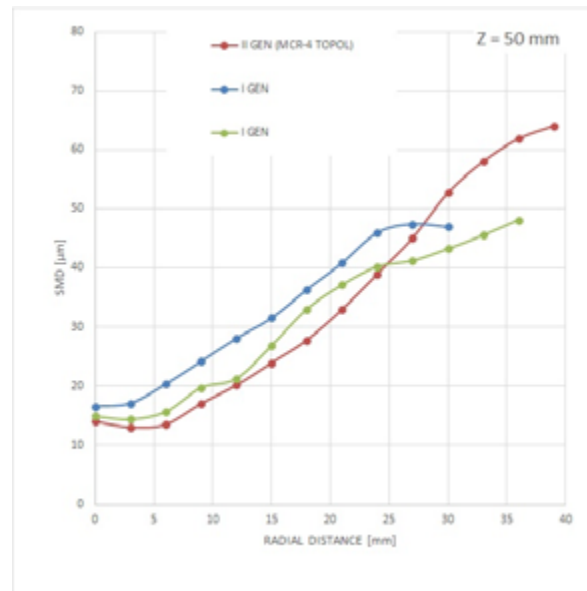
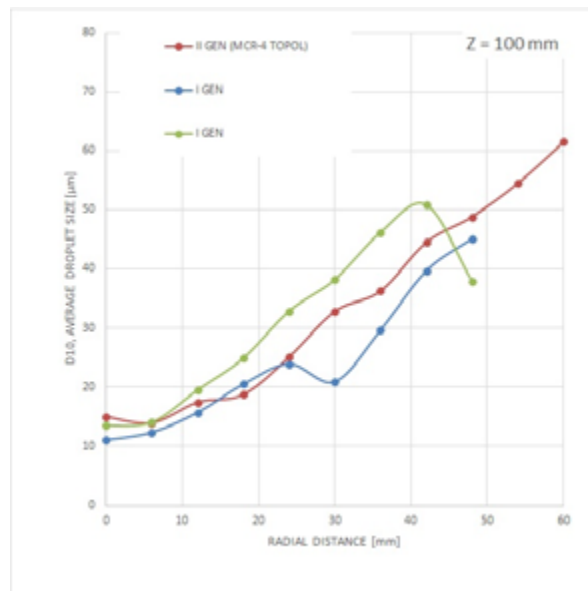
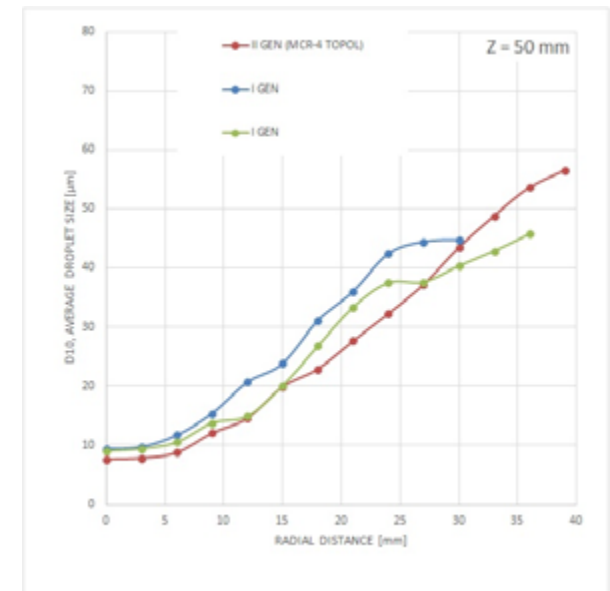
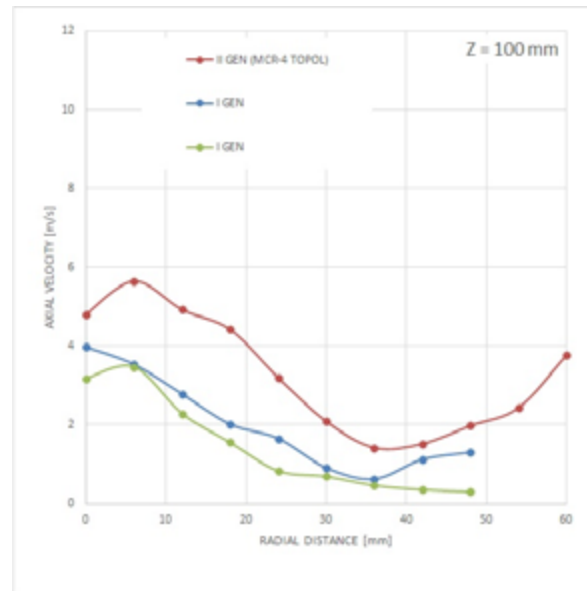
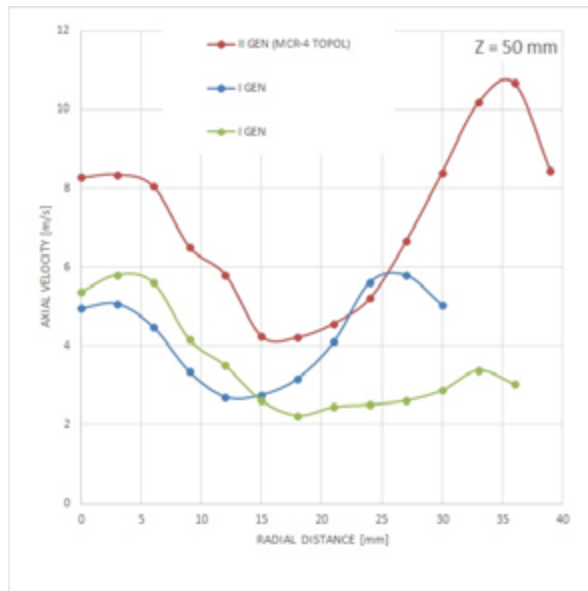
Application using up to four micro-atomizers from four different positions using two dose dispensers is becoming a new challenge in the field of current treatment techniques...

SPRAY ANGLE

The **MCR-4 TOPOL®** micro-atomizer enables the application of a cytostatic agent under an angle of up to 80 degrees with a distinctive spray cone. A larger pattern area is required in terms of a higher effect of surface and deep diffusion.

SPRAY STABILITY

MCR-4 TOPOL® has been specially designed with respect to the required enhancement of mass flow into the areas of fluid walls. Unlike the previous generation, where the substantial mass of the spray was directed to the area of its axis. Together with the modified particle size and velocity, the **MCR-4 TOPOL®** micro-atomizer spray is less prone to lateral spray drift in a very complex capnoperitoneum setting.



Independent measurements performed by the Faculty of Mechanical Engineering of the Brno. University of Technology.

IMPACT

The aerosol produced by the **MCR-4 TOPOL®** micro-atomizer provides for an effective penetration of cytostatic agent particles deep into the affected tissue. For the largest droplet with a diameter of 50 µm and a particle velocity of 8 m/s (at a distance of 50 mm from the nozzle), the value **We=44** is absolutely unmatched.

ATOMIZER	SMD 50 [µm]	SMD 75 - deska [µm]	SMD 100 [µm]	SCA 50 [deg]
I GEN	33,3	36,5	31,2	53,5
II GEN (MCR-4 TOPOL)	44,5	39,2	43,2	71,4
I GEN	32,0	33,4	34,8	64,5

AFFORDABILITY

The **MCR-4 TOPOL®** pricing policy is essential for ensuring product availability. Exactly where it is needed...

- the price can be fixed for **5 years**

TOPOL[®] MCR-4 TOPOL[®]

A DEVICE DEVELOPED AND MANUFACTURED IN THE CZECH REPUBLIC
Department of Construction and Development SKALA-Medica s.r.o., AeroRes Group, Soběslav

