

VIRGO**VACPISA 049 P**

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SA cascade outgassing

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Object: Estimation of the Superattenuator cascade outgassing

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I have estimated the SA cascade outgassing as inferred from the component outgassing measurements performed in the Virgo Pisa Vacuum Lab. and from literature:

<i>item</i>	<i>flow (mbar l/s)</i>
filters	no baking: 3.0×10^{-5} moderate baking: 3.0×10^{-6}
blades	1.7×10^{-5}
magnets	unbaked: 4.3×10^{-5} baked: 8.6×10^{-8}
cabling	1.0×10^{-5}
others	$< 2.0 \times 10^{-6}$

- **Filters body:** cleaned stainless steel can have outgassing rates as low as 10^{-11} mbar l s⁻¹ cm⁻² with baking at 150 °C and 10^{-10} mbar l s⁻¹ cm⁻² without baking (measured by VIRGO and commonly found in literature)
- **Blades:** data for nickel and chromium plated steel (found in literature)
- **Magnets:** ferrite outgassing (notes VACPISA 046, VACPISA 050)
- **Cabling:** conservative estimation for 3 km of Kapton cabling (note VACPISA 036)
- **Others:** includes motors, exposed parts of glues etc.

The total estimated outgassing flow is of the order of 10^{-4} mbar l s⁻¹, which is one order of magnitude below the one quoted in the Virgo Final Design (10^{-3} mbar l s⁻¹).

A detailed discussion of components UHV compatibility with the list of accepted, temporarily accepted and rejected materials can be found in VACPISA 051. Cleaning procedures and recommendations are also given.