Ultra-High Vacuum safe deep black direct coatings

ACKTAR MagicBlack™ & FractalBlack™ for the absorption of stray light and laser radiation in optics & photonics

Use

MagicBlack™ and FractalBlack™ are directly vapor deposited onto the mechanical components in a reactive vacuum coating process (PVD) as thin metal or rather metal oxide coating. It is especially the excellent optical properties, the very low outgassing and the stability over a wide temperature range that make them unrivalled in almost all applications. The special surface structure of the deep black coatings absorbs unwanted radiation to a great extent.

Very low outgassing

Own measurements as well as those made by CECOM*, technology leader for precision mechanics and UHV applications, showed the following specific outgassing rates:

- for MagicBlack™ 1.32 E-13 [mbar*l/(s*cm²)]
- for FractalBlack™ 2.92 E-13 [mbar*l/(s*cm²)]

required maximum value: 1.00 E-12 [mbar*l/(s*cm²)]

the result of the residual gas analysis for both coatings: 0,24%
required maximum value: 1,00%

Applications

MagicBlack™ and FractalBlack™ are widely used in science & research, in industrial fields such as analytics & measurement technology, in semiconductors, in medical & life science as well as in aerospace. They function in, among others, beam dumps, coatings of housings and mounts, enable black radiators and black body radiators, etc.. Used on components and lenses, they help to optimize the beam guidance in laser systems. They are essential for imaging techniques, for example for endoscopes. Also in IR spectrometers and for cameras used in space, these coatings are irreplaceable. Highly precise lithography systems in microsystem technology, for which stray radiation is extremely harmful, require these coatings as well. But also solar absorber layers, applied in the solar thermal energy, use them. In photonics, lasers, high-performance optics, as well as in the solar energy use and the manufacture of electrolytic capacitors, hardly any field of important future technologies can do without the high-absorbing coatings from ACKTAR.

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