

# Vapour Deposition

CVD / PVD / ID-PVD coatings



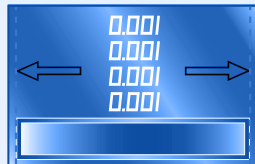
High wear resistance



Improved electrical conductivity



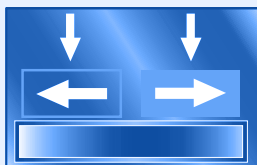
Improved optical properties



Good dimensional and shape accuracy



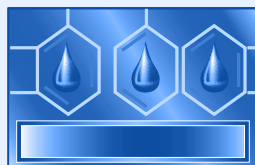
Highest level of purity



Adjustment to optimum friction properties



Optimisation of adhesive properties



Excellent corrosion resistance

# Vapour Deposition

## CVD / PVD / ID-PVD coatings

### Vapour Deposition

Vapour Deposition is the English term for surface treatment through vapour. This vapour may be produced by Chemical reactions (CVD) or physical reactions (PVD). Chemical reactions occur at high temperatures (from 800 °C). Physical reactions occur from a plasma, which means that exactly through these reactions at very low temperatures (starting at room temperature), layers can be added. PVD can also be applied to all solid materials that you can think of, metal, ceramics, glass as well as plastics. These techniques originate combinations with unique properties.

### Physical Vapour Deposition (PVD)

The low temperature does not affect the materials to be coated in their dimensions. Typical thicknesses range from a couple of nanometers to 25µm. The possibilities for applying coatings are endless and depend on the properties you want to add to the base material. Metallic coatings can be applied that can, for example, increase the electrical conductivity, improve the corrosion properties or be used for (optical) reflection. Ceramic coatings can improve wear resistance or add

optical properties to materials. Furthermore, these layers are perfectly combinable with galvanic bases originating combinations that excel in wear resistance combined with corrosion properties.

### Internal Diameter Physical Vapour Deposition (ID PVD)

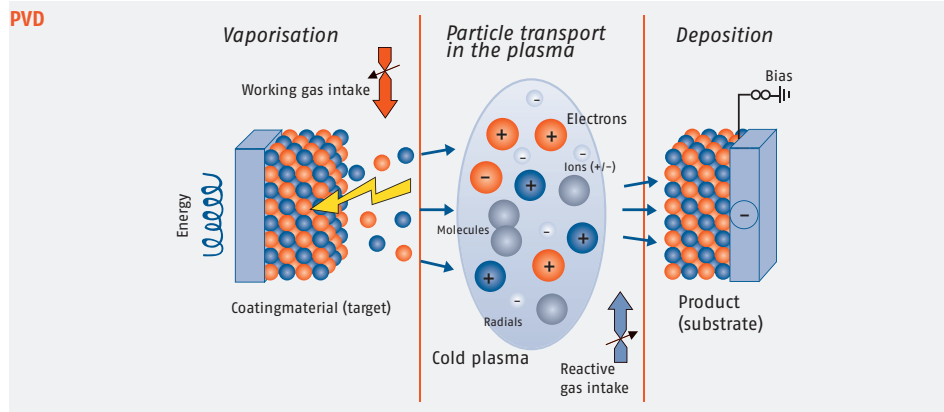
Traditional PVD is limited in applying thin layers on internal diameters. ID PVD uses specially developed microwave sputter equipment for applying coatings to internal surfaces. A rod-shaped target is hereby placed in the cavity of the work piece. This enables to provide the inner diameter of a product with a very homogeneous layer.

### Chemical Vapour Deposition (CVD)

The unique properties of the CVD process of Heat & Surface Treatment consist in this process with a very high penetration rate, so that everywhere on a provided surface a layer is created (even in the hair cracks). Also on undercuts and even on more complex geometrical shapes such as metallic foams and the like. The CVD process is generally used to add an improved wear resistance, corrosion resistance or increased

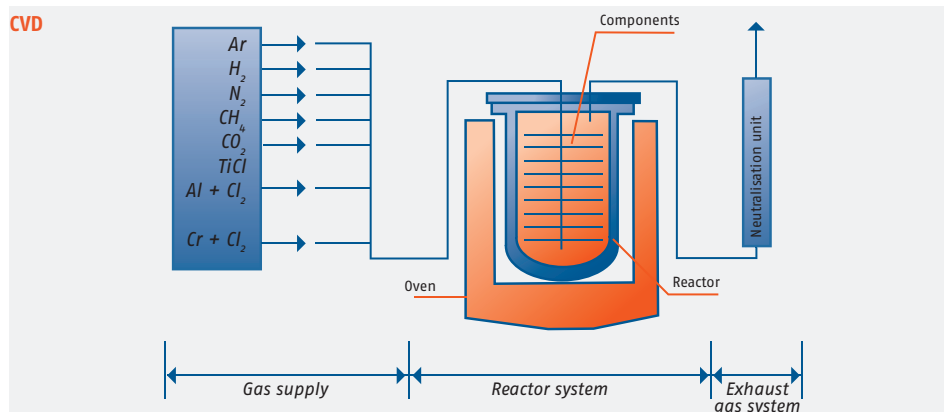
friction properties to a component. CVD coatings can also be used for application at a high temperature or for anti-adhesive properties. All materials that can withstand the applied process temperature can be used. Think here e.g. of different kinds of steel, glass, and even graphite.

Heat & Surface Treatment B.V. is a specialist in the field of the application of customer-specific coatings on components and has many years of experience in this field of expertise. It supplies demanding industries such as Semicon and the aviation and aerospace industries. This makes Heat & Surface Treatment B.V. a competent partner who may offer extensive advice on coating and application. Heat & Surface Treatment B.V. is NADCAP certified.



### Possible areas of application

- Aviation and Aerospace (Heat & Surface Treatment B.V. is NADCAP certified)
- Automotive Industry
- Medical Industry
- Semiconductor Industry
- Graphical Industry
- Mould Industry
- General Machine Construction
- Ultra High Vacuum Technology



### Benefits

- Very high surface hardness up to 3500 HV
- Good size and shape accuracy
- Good corrosion properties
- Suitable for vacuum use
- Conductivity application on non-conductive materials
- High wear resistance
- Improved electrical conductivity
- Improved optical properties
- Adjustment to optimum friction properties
- Optimisation of adhesive properties
- Excellent corrosion resistance