

# KANIGEN®

## The layer with extraordinary properties!

### What is KANIGEN®?

KANIGEN® is a world-renowned brand name for electroless nickel of top quality. With KANIGEN® you have a sophisticated system adapted to current demands. Because, KANIGEN® is always in the process of advanced development spending tremendous time and effort.

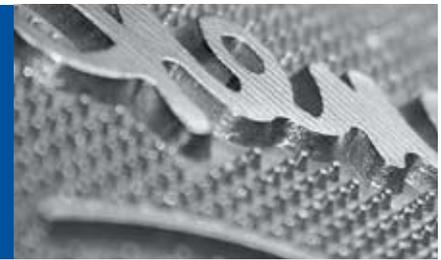
The KANIGEN® guarantees uniform layer thicknesses even in strongly structured surfaces, as the known disadvantages of the method with external power sources do not appear. Reproducible quality is another essential factor of our KANIGEN® technique.

Due to its specific properties, KANIGEN® enables economic solutions in almost all industrial sectors. With KANIGEN® you are

using the most experienced chemical-nickel process – worldwide as well as in Germany – in the industrial large-scale application.



# KANIGEN® Protects from corrosion, wear and pollutions. It is the adhesive base for soldering agents or subsequent coatings. It is the intermediate layer for porous or fissured end layers.



## The advantages:

### Cost reduction

- Enables the use of low-quality base material
- Simplifies production, particularly in the area of chipping
- Increases holding times
- Enables the recovery of the target state
- A uniformity and accuracy of layer up to  $\pm 2\%$  saves reworking
- High availability in terms of scarce resources

### Quality enhancement

- Coating quality reproducible at the same level
- Competitive advantages by the increase in product quality
- High dimension accuracy of the KANIGEN® layer up to  $\pm 2\%$
- Coating quality testable according to DIN
- Optimum adaptation to the respective application conditions
- Product features are positively modified
- A very thin layer undertakes additional functions for the base material
- Extensively independent of materials (even non-metals)
- Protection against corrosion, wear and pollutions
- It is the adhesive base for soldering agents and subsequent coatings
- It is the intermediate layer for porous or fissured end coats

## The properties:

### Corrosion behaviour

Our results from tests according to DIN and in-house test series are based on coatings from the ongoing production and are dependent on the base material – without test-directed treatment or selection of workpieces. For this reason the transferability in practice is guaranteed. The KANIGEN® technique offers you this security.

### Coefficients of friction

KANIGEN® against	Lubricated	Non-lubricated
galv. Nickel	0,26	frisst
KANIGEN®	0,25	0,45
Steel	0,21	0,38
Cast iron	0,08	0,16
Chrome	0,30	0,43
Compare. steel with steel	0,20	frisst

### Expansion

- In the deposition state up to 2.2 % under stress without crack formation
- Up to 6% according to heat treatment
- After heat treatment from about 600°C like base material

### Magnetism

- Almost nonmagnetic in the deposition state
- After heat treatment till 140 oersted coercive force

### Structure

- X-ray amorphous in the deposition state
- Alteration through heat treatment with simultaneous influence on hardness and ductility

### Layer thickness

- Constant tolerance of  $\pm 2\%$
- Maximum limit  $\infty$
- Recommended corrosion exposure:
  - Mild: 2  $\mu\text{m}$  to < 10  $\mu\text{m}$
  - Moderate: 10  $\mu\text{m}$  to < 25  $\mu\text{m}$
  - Strong: 25  $\mu\text{m}$  to < 50  $\mu\text{m}$
  - Very strong:  $\geq 50 \mu\text{m}$

Our obtained practical values correspond to the general state of technology and the specifications of the DIN EN ISO 4527. Further detailed information can be found in our technology brochure.

### Resistance

- Up to about 60  $\mu\text{m} \Omega \times \text{cm}^2/\text{cm}$

### Melting point

- About 890°C

### Specific weight

- About 7.9  $\text{g}/\text{cm}^3$

### Adhesive strength

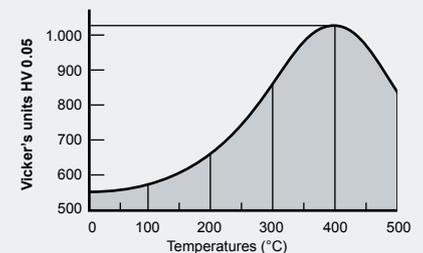
- Up to about 440  $\text{N}/\text{mm}^2$  according to base material and heat treatment
- From about 600°C heat treatment, the layer partially diffuses in the base material

### Coefficients of wear

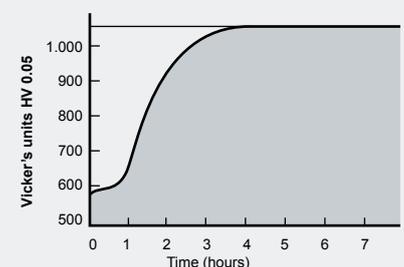
Coefficients of wear according to Taber 1,000 g/1,000 U	Removal in g
In deposition state	9 – 10
After heat treatment at about 290°C	4 – 5

### Hardness

- Heat treatment after 1 hour



- Heat treatment at 290°C



### Heinrich Schnarr GmbH

Industriestraße 5  
63814 Mainaschaff / Germany  
Phone: +49 6021 709-0  
Fax: +49 6021 709-46  
E-Mail: info@schnarr.eu