

## Technical datasheet

ZNnGard™ Zinc Nickel Nano-Structured coating system is part of an overall strategy to replace any remaining cadmium processes and eliminate environmental and worker safety issues while significantly improving performance and reducing life-cycle costs.

<b>Thickness</b>	10 – 18 $\mu\text{m}$
<b>Structure</b>	$\gamma$ phase (12% -16% Ni)
<b>Hardness*</b>	400 – 500 VHN
<b>Grain size*</b>	<100 nm
<b>OCP vs (SHE)</b>	-0.503 V to -0.653 V
<b>Pin on disc (ASTM G99)*</b>	0.14 – 0.34 Coefficient of friction
<b><i>K</i> factor</b>	0.24 (without lubricant) 0.17 (with lubricant)
<b>Operating temperature</b>	-148 °F to 392 °F (-100 °C to 200 °C)
<b>Salt spray (ASTM B117)</b>	>6000 h
<b>Adhesion test (ASTM B571)</b>	Bend test 180° PASS
<b>Hydrogen embrittlement (ASTM F519)</b>	PASS - 200 h at 75% NFS
<b>Hydrogen Re-embrittlement</b>	PASS
<b>Applications</b>	High and low strength steel
<b>Standards/Specifications</b>	ASTM B841 Class 2 AN ASTM F1941

### Sigma Fasteners, Inc.

Phone: (281) 214-8800  
www.sigmafasteners.com  
sales@sigmafasteners.com  
Houston, Texas 77032