Essential Information on Nickel and Stainless Steel Flake Pigments

Stainless steel and pure nickel flake pigments have been used in the surface coatings industry for many years. They exhibit unique properties that make them suitable, and sometimes crucial, for applications where other flake pigments are not suitable.

Stainless Steel Flake Pigments

Hart Materials is a supplier of Novamet Stainless Steel Flakes, which are manufactured from high quality Cr/Ni/Mo UNS-S 31603 powders (formerly known as AISI Type 316).

They are fully compatible with water-based and solvent-based liquid paints, as well as powder coating resins and printing inks.

As expected of a high quality stainless steel product, these flakes exhibit excellent corrosion resistance in many aggressive environments. They are highly suitable for external exposure in industrial and marine situations.

The inherent hardness of the material also conveys additional durability in uses where mechanical wear is a potential issue.

Novamet Stainless Steel Flakes all exhibit ferromagnetism. Typical properties of acrylic-based coatings containing Fine Leafing Grade Flake are shown below.

<table>
<thead>
<tr>
<th>Flake Type</th>
<th>Pigment/Binder Ratio</th>
<th>$M_s$ Saturation Magnetisation</th>
<th>$M_r$ Remanent Magnetisation</th>
<th>$H_c$ Coercivity</th>
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</thead>
<tbody>
<tr>
<td>Stainless Steel Fine Leafing Grade</td>
<td>1.33:1</td>
<td>$18 \times 10^{-3}$ emu</td>
<td>$6 \times 10^{-3}$ emu</td>
<td>69 Oe</td>
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Coatings containing stainless steel flake have an attractive full-metallic appearance, and are significantly darker in colour than other decorative metallic pigments. Colour swatches can be obtained on request from info@hartmaterials.com.

Nickel Flake Pigments

Hart Materials also supplies Novamet Nickel Flakes. Manufactured from high purity nickel powder, this product is refined using the unique vapour phase Carbonyl Process and yields a typical purity of 99.98% Ni.

Novamet Nickel Flakes are fully compatible with water-based and solvent-based liquid paint systems, as well as powder coating resins and inks. They are highly resistant to corrosion in many environments, particularly in alkaline conditions. However, they are not suitable for external exposure in industrial and marine situations, as nickel is susceptible to attack by sulphur dioxide.

Coatings containing Novamet Nickel Flake also exhibit an attractive full-metallic appearance, not as bright as some decorative metallic pigments but with a yellow hue reminiscent of silver coatings.

Colour swatches showing the nickel flake can be obtained on request from info@hartmaterials.com.
Novamet Functional Nickel flakes

In addition to the range of decorative nickel flakes, Hart Materials also supplies two grades of Novamet Functional Nickel Flakes, with a similar high level of chemical purity.

Novamet Conductive Nickel Flake Grade HCA-1 was specifically developed to provide paint-based coatings with a high level of electrical conductivity, for use in electronic shielding applications (RFI/EMC).

HCA-1 Nickel Flakes are around 1µm thick, as opposed to a typical thickness of 0.4 µm for the bright decorative grades. This gives the flakes a much higher current carrying capacity.

However, the coatings produced with HCA-1 are not bright and reflective, but have an attractive semi-bright, medium grey appearance.

Pictured left: HCA-1 Nickel Flake

Novamet Nickel Flake Grade CHT was developed for specialised functional applications, such as an anti-seize additive in oils and greases that require an even greater flake thickness than HCA-1.

Their specific advantage is that they are appropriate in situations where the lubricants operate at elevated temperatures.

Pictured right: Nickel Flake Grade CHT

To request your FREE Decorative Stainless Steel and Nickel Flakes swatch sheet, please email us at info@hartmaterials.com.