NANOCAT® NICKEL/IRON ALLOY POWDER

PRODUCT IDENTIFICATION
Identification label: **NICKEL/IRON ALLOY POWDER**. Synonym: Nitinol. Chemical name: nickel iron powder, chemical formula: powder – Ni-Fe. This powder was prepared by electric explosion of a metallic wire in argon, wetted by hexane and packaged in glass ampoules or bottles.

CHEMICAL COMPOSITION
Powder consists of nickel iron particles. Ni/Fe powder contains 23% wt. Ni, 67% wt. Fe, 8% wt. iron and nickel oxides and 2% wt. carbon.

PHYSICAL AND CHEMICAL PROPERTIES
Appearance and color: dark gray to black powder. The particles are spherical and form ≤10 µm agglomerates. TEM micrograph of particles is shown in Fig 1. Bulk density of dry powder is 0.76 g/cm³. BET surface area – 9.7 m²/g. Mean particle size determined from the BET data is 92 nm. Particle size distribution function is shown in Fig. 2. This material may be applied in catalysis and materials science.

DANGER
Combustible metal powder. Nickel/iron powder may be ignited in open air or by open fire. Linear burning rate is 0.79 mm/s. This material has general toxic and irritating effects. Maximum allowable day concentration is 0.002 mg/m³. Explosion-safe.

HEALTH HAZARD
Nuisance dust. If inhaled, may cause headache, elevated body temperature, vertigo and weakness. Irritates eye cornea.
SAFE HANDLING
Use health protection means as those used for handling readily flammable substances. Wear respirators. Do NOT heat above 200°.

Fig.1 TEM micrograph of Nickel Iron powder.

Fig.2 Particle size distribution. X-axis: particle size in nm; Y-axis: number of particles.

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