NANOCAT® INCONEL 625 POWDER

PRODUCT IDENTIFICATION
Identification label: name: INCONEL 625 POWDER. Chemical name: alloy NiCr powder, chemical formula: powder – NiCr. This powder was prepared by electric explosion of a metallic wire in argon and packaged in glass ampoules or bottles under inert atmosphere.

CHEMICAL COMPOSITION
Powder consists of 61% of metal nickel and 21,4% chromium. Powder batches contained impurities as follows:

- Mo: 9%
- Nb+Ta: 3,65%
- Si: 0,125%
- Al: 0,2%
- Ti: 0,2%
- Contents of carbon: 5 – 10%.

PHYSICAL AND CHEMICAL PROPERTIES
Appearance and color: dark gray 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 about 0.66 g/cm³. Average particle size is 100 nm. BET surface area – 4.5 to 6.0 m²/g. Probabilistic (arithmetic mean) particle size āₐ = 52 nm; surface area mean size āₐ = 63 nm; mass mean size - āₘ = 76. HRTEM images reveal many crystalline defects. When exposed to low calorie heat source (spirit-lamp) in open air, this powder is ignited for 5 s. Linear burning front propagation rate is 0.70 mm/c with front length 22 to 23 mm. Melting point is 1452°C. This material may be applied in catalysis and materials science.
**DANGER**
Readily combustible metal powder. This material also has general toxic and irritating effects. Maximum allowable day concentration is 0.001 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 Inconel powder particles.](image)

![Fig.2 Particle size distribution.](image)

X-axis: particle size intervals in nm; Y-axis: number of particles.

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