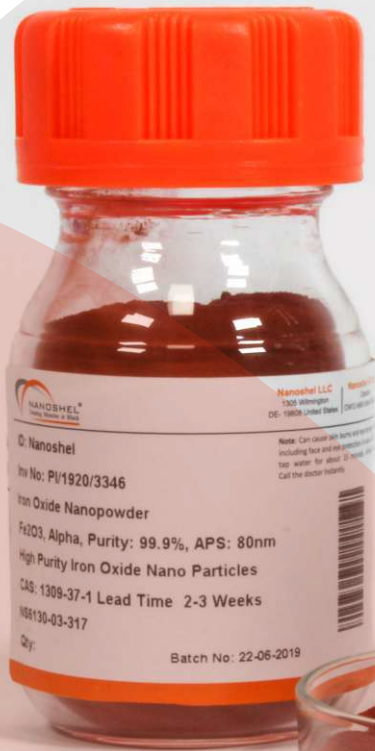


# IRON OXIDE NANOPOWDER







Purity  
**99.9%**

$\text{Fe}_2\text{O}_3/\text{Fe}_3\text{O}_4$



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NS6130-03-317

**NEXT** 

## IRON OXIDE NANOPOWDER

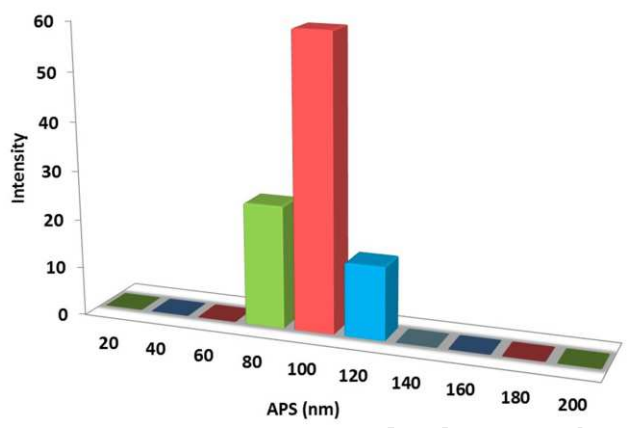
Iron oxide (IO) nanoparticles consist of maghemite ( $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>) and magnetite (Fe<sub>3</sub>O<sub>4</sub>) particles with diameters ranging from 1 and 100 nanometer and find applications in magnetic data storage, biosensing, drug-delivery etc. In nanoparticles (NPs), the surface area to volume ratio increases significantly. This allows a considerably higher binding capacity and excellent dispersability of NPs in solutions. Magnetic NPs, with sizes between 2 and 20 nm display superparamagnetism, i.e. their magnetization is zero, in the absence of an external magnetic field and they can be magnetized by an external magnetic source. This property provides additional stability for magnetic nanoparticles in solutions. Due to their low toxicity, super paramagnetic properties, such as surface area and volume ratio, and simple separation methodology, magnetic iron oxide (Fe<sub>3</sub>O<sub>4</sub> and  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>) NPs have attracted much attention and are especially interesting in biomedical applications for protein immobilization, such as diagnostic magnetic resonance imaging (MRI), thermal therapy, and drug delivery.

## QuickFACTS

Product	:	Iron Oxide Nanopowder
Stock No	:	NS6130-03-317 to NS6130-03-322
CAS	:	1309-37-1
Color	:	Red Brown to Black Brown
Form	:	Powder
Symbol	:	Fe <sub>2</sub> O <sub>3</sub> /Fe <sub>3</sub> O <sub>4</sub>
Group	:	Oxygen 16/Iron 8

### Electronic Configuration:

Iron [Ar] 3d<sup>6</sup> 4s<sup>2</sup>/Oxygen [He] 2s<sup>2</sup> 2p<sup>4</sup>



### ADDITIONAL POWDER CHARACTERISTICS

Stock No.	Purity	APS
NS6130-03-317 Alpha	99.9%	<80nm
NS6130-03-318 Alpha	99.9%	80-100nm
NS6130-03-319	99.9%	80-100nm
NS6130-03-320	99.9%	80-100nm
NS6130-03-321	99.9%	80nm
NS6130-03-322	99.9%	<30nm

### TECHNICAL SPECIFICATION

Molecular Formula	Molecular Weight	Density	Melting Point
Fe <sub>2</sub> O <sub>3</sub> /Fe <sub>3</sub> O <sub>4</sub>	159.69 g/mol	5.242 g/cm <sup>3</sup>	1565 °C

### CHEMICAL COMPOSITION

Product	Weight Percent (nominal)	
	Fe <sub>2</sub> O <sub>3</sub> /Fe <sub>3</sub> O <sub>4</sub>	Other Metal
Iron Oxide Nanopowder	99.9%	1000ppm

### APPLICATIONS

- > Magnetic Resonance Imaging (MRI)
- > Target specific drug delivery
- > Gene carriers for gene therapy
- > As therapeutic agents for hyperthermia based cancer treatments
- > Magnetic sensing probes for in-vitro diagnostics (IVD)
- > Vaccine and antibody production



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CERTIFIED COMPANY

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