TECHINSTRO®
Vision Beyond Technology

Iron Oxide Nanoparticles

(Fe_2O_3)

Product Catalogue

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Iron Oxide Nanoparticles (Iron Oxide nanopowder) are at the fore of accelerated development in nanotechnology. It consists of Magnetite (Fe_3O_4) and Hematite (γ-Fe_2O_3) particles. These particles have diameters extending from 1 and 100 nanometers. Hence, they are also known as Ferrous Oxide nanoparticles and Magnetite. Iron oxide nanopowder is beneficial as it can be altered by inorganic and organic factors, non-ionic detergents, starches, drugs, enzymes, antibodies, and proteins for additional applications depending on their extensive surface chemistry strengths. The Fe_3O_4 nanoparticles manufacture using numerous methods such as dry processes, microbiological, and wet chemical techniques. We manufacture Fe_2O_3 nanoparticles in a sol-gel way in bulk quantity with multi-point quality checks to get accurate Iron oxide nanopowder.

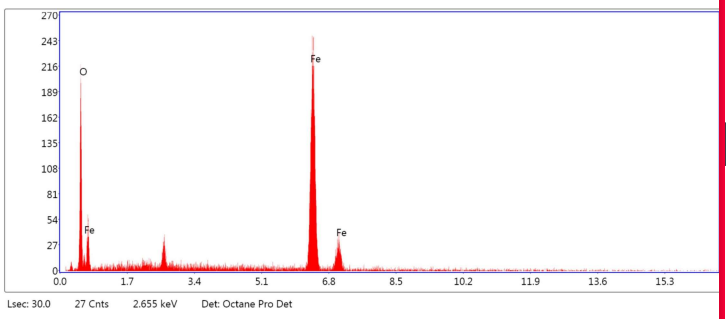
Product Code: Fe_2O_3-Nano

Technical Properties:

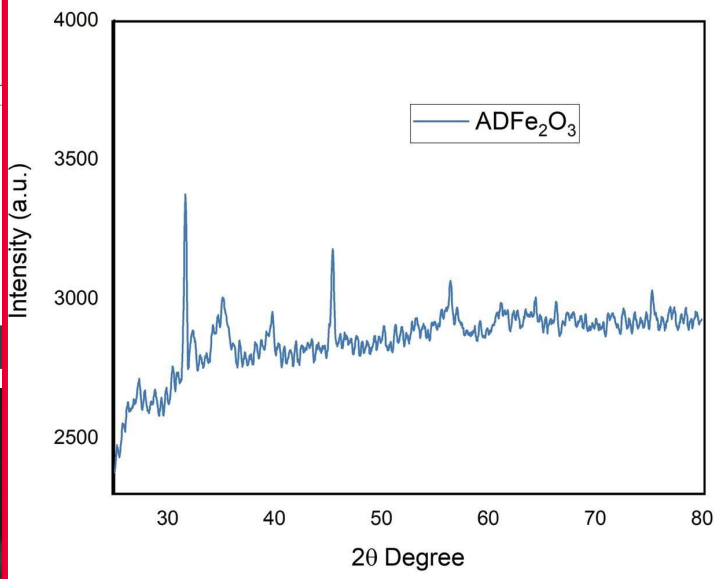
SPECIFICATIONS	*VALUES*
Molecular Formula	Fe_2O_3
CAS Number	1309-37-1
Bulk Density	0.69 g/cm^3
Average Particle Size	30 - 60 nm
Molecular Weight	159.69 g/mol
Melting Point	1565 °C
Purity	>99.9%
Form Factor	Powder
Morphology	Spherical
Surface Area	80-100 m^2/g

Characterization Analysis

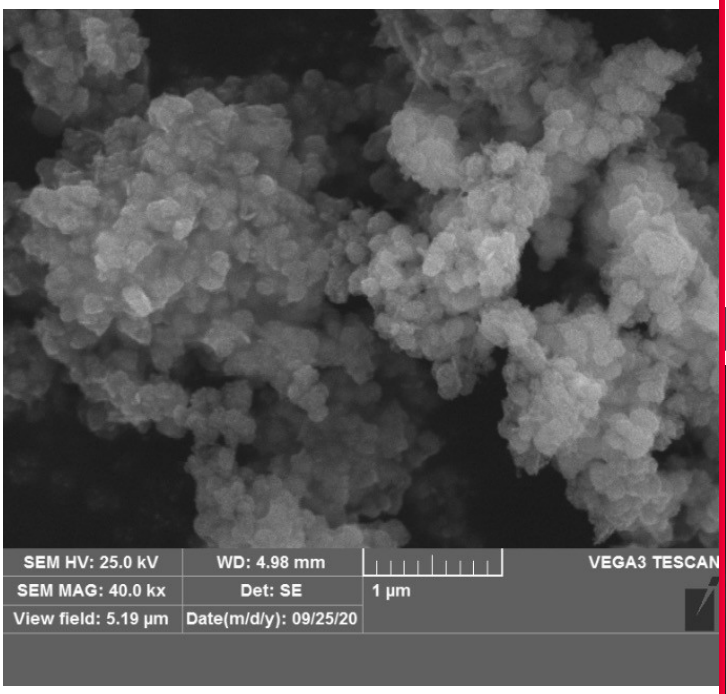
EDX



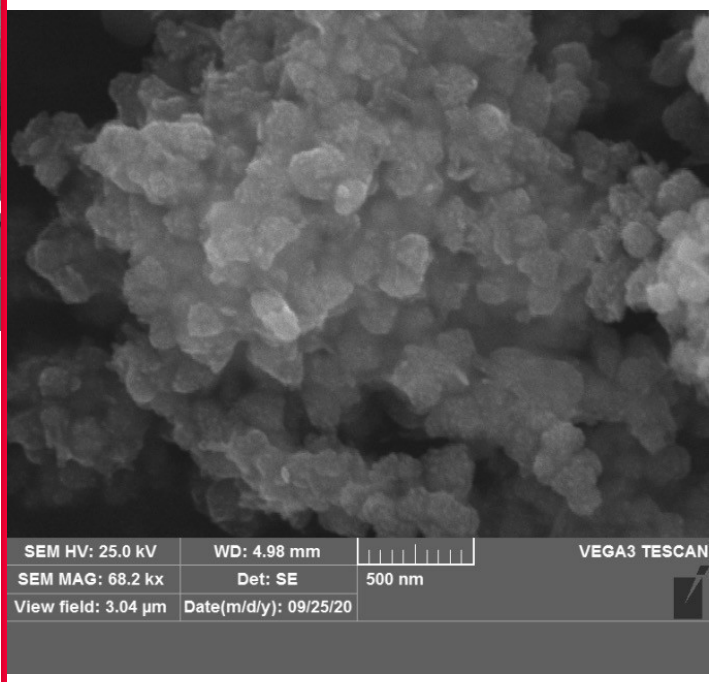
XRD



SEM-1



SEM-2



Characterization Analysis

Size Distribution Report by Intensity

v2.2

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Sample Details

Sample Name: F1
SOP Name: mansettings.nano
General Notes:

File Name:	Metal.dts	**Dispersant Name:**	Water
Record Number:	91	**Dispersant RI:**	1.330
Material RI:	2.20	**Viscosity (cP):**	16.1118
Material Absorbtion:	0.100	**Measurement Date and Time:**	17 April 2021 15:43:54

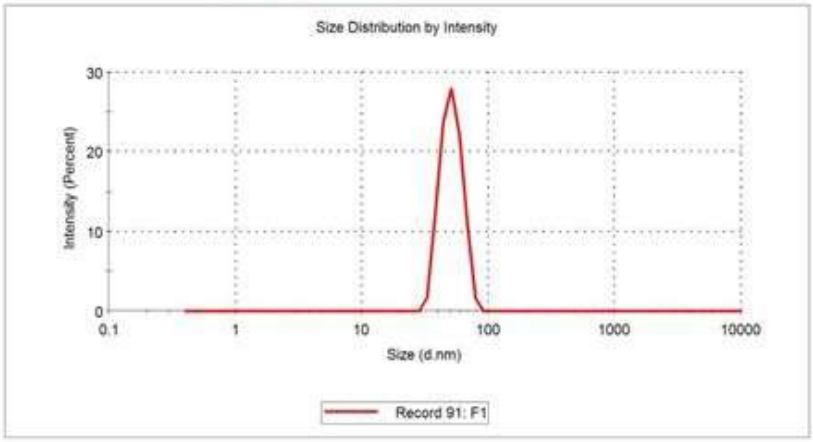
System

Temperature (°C):	25.0	**Duration Used (s):**	70
Count Rate (kcps):	182.5	**Measurement Position (mm):**	4.65
Cell Description:	Disposable sizing cuvette	**Attenuator:**	9

Results

			Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm):	56.41	**Peak 1:**	51.37	100.0	9.805
PdI:	0.068	**Peak 2:**	0.000	0.0	0.000
Intercept:	0.883	**Peak 3:**	0.000	0.0	0.000

Result quality Refer to quality report



Applications

- Contrast agents for magnetic resonance imaging (MRI)
- Drug carriers for target specific drug delivery
- Gene carriers for gene therapy
- Therapeutic agents for hyperthermia-based cancer treatments
- Magnetic sensing probes for in-vitro diagnostics (IVD)
- Neoadjuvant for vaccine and antibody production
- Nano fertilizers, nano-fungicides, nano-pesticides.
- Nanosensors, nanofood, encapsulation, food packing, nanocoatings, precision farming & nanoporous membranes.
- Photovoltaic film coatings, improved efficiency of fuel production & consumption, fuel cells, and batteries.
- Printed electronics, nanoscale memory, nanowires, nems, spintronics, and quantum dots.

Features

- Superparamagnetic nanoparticles for hyperthermia treatment
- Biocompatibility and Magnetic ability
- Ability to be functionalized
- Cost-efficient commercial production of IONPs with appropriate solubility and biocompatibility for clinical trials
- Anti-inflammatories, antibiotics, and antifungals.
- No adverse effects on plant growth.
- Short reaction time and low energy consumption

Safety Instructions

- Protective gloves should be worn at the time of operation.
- Safety goggle is a must during handling.
- Do not touch any part of the skin or eyes while using.
- Store in a moisture-proof dry place.

Packaging

It is supplied in a highly-protective moisture-proof bottle with a seal. It is finally packed in a shockproof sheet with a corrugated box.

Handling

When handling, the researcher should use powder-free non-latex gloves, which should be held carefully. While experimenting, if the operator uses a nanopowder with bare hands, the chances of contamination due to finger oil are very high. Therefore, it is advised to use nylon or polyester gloves.

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