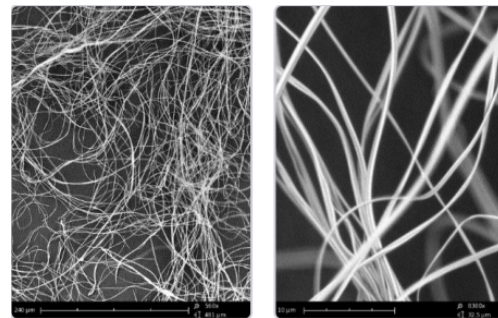


NnF CERAM®

$\text{Al}_2\text{O}_3 \cdot \alpha / \gamma$

 Aluminium trioxide nanofibers

Aluminium trioxide nanofibers are a ceramic material developed and produced by PARDAM NANO4FIBERS s.r.o. in the Czech Republic. These products are based on a ceramic aluminium trioxide matrix enriched with a small amount of porous particles of the same material. Aluminium trioxide nanofibrous material is generally produced by modification of the γ -crystalline phase, and the manufacturing process can be easily modified to obtain other phases such as α -crystalline phase. The combination of nanofibrous morphology and specific properties of aluminium trioxide predispose Al_2O_3 to a wide range of applications in various industries. Al_2O_3 nanofibers can also be used as a carrier for various catalytic nanoparticles (e.g., Pt, Pd, Ag, Fe), which are incorporated into the porous structure of the nanofibers in a single manufacturing step, without the need for subsequent coating.



Original microscopy imagery

α - Al_2O_3 is crystalline and also known as corundum, which is an important mineral; with various admixtures it forms gems such as ruby and sapphire. γ - Al_2O_3 is also crystalline, but its crystal structure differs from α - Al_2O_3 . The higher reactivity and specific surface properties make γ - Al_2O_3 an important material for catalysis and other applications.

 α - Aluminium trioxide

- Abrasive
- Advanced ceramic material
- Electronic components - electrical insulator
- Thermal conductor
- Nanocomposites

 γ - Aluminium trioxide

- Optical displays
- Catalyst and catalyst carrier
- Electrical components - electrical insulator
- Thermal conductor
- Nanocomposites
- Separator
- Separator material for batteries

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Physical properties and material notes

PROPERTY	α - Aluminium trioxide	γ - Aluminium trioxide
Structure	Nanofibrous structure; polycrystalline nanofiber; hard and durable material	Nanofibrous structure; polycrystalline nanofiber; flexible material
Crystalline phase	Trigonal	Cubic
Form and structure	3D structure	3D structure
Typical fiber diameter	130 - 550 nm (± 100 nm)	130 - 550 nm (± 100 nm)
Fiber length	2 to hundreds of μm . Fiber length can be modified by grinding to 2 - 12 μm (80%). Contact us for material modifications.	
Specific surface area	3 - 15 m^2/g	3 - 15 m^2/g
Melting point	2 045 $^{\circ}\text{C}$	Change in crystal modification at 1 000 $^{\circ}\text{C}$
Thermal conductivity	High thermal conductivity 30 $\text{W m}^{-1} \text{K}^{-1}$	
Electrical conductivity	Good electrical insulator; electrical conductivity $< 10^{-14} \text{ S m}^{-1}$	
Optical properties	Refractive index 1.76	Refractive index 1.7

MATERIAL DOPING

Aluminium trioxide nanofibers can be doped with various additives to optimize their specific properties.

IMPORTANT NOTICE

All statements, technical information and recommendations in this document are based on tests carried out by the team of PARDAM NANO4FIBERS s.r.o.