Product Data Sheet

3M™ Dyneon™

PTFE Fine Powder TF 2029Z

Product Description

3M™ Dyneon™ PTFE Fine Powder TF 2029Z is recommended for electrical tape and various yarn applications like dental, weaving, sewing, filter and architectural yarns.

Special Features

- Meets ASTM D 4895 Type I, Grade 1, Class B classification
- High molecular weight PTFE powder produced by emulsion polymerisation
- Designed for low reduction ratio range
- Excellent chemical inertness
- Low friction behaviour
- Provides high stretch ratio in extrudate
- Processing by standard paste extrusion
- High flame retardance
- Exceptional temperature resistance
- Very good electrical properties

Properties	Test method	Unit	Value*
Bulk Density	DIN EN ISO 60	g/l	450
Average Particle Size	ISO 13320	µm	640
Powder Flow Properties			free-flowing
Extrusion Pressure (Reduction Ratio 400)	ASTM D 4895	MPa	51
Reduction Ratio Range	Internal Dyneon method	-	5 - 100:1
Tensile Strength	DIN EN ISO 527-3	MPa	34
Elongation at Break	DIN EN ISO 527-3	%	380
Specific Gravity	DIN EN ISO 12086	g/cm³	2.15

* average values

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Typical Properties

3M™ Dyneon™ PTFE Fine Powder TF 2029Z is the preferred grade for products with high mechanical strength. Because of its relatively high molecular weight, high tensile yarns can also be manufactured.

Typical Applications

3M™ Dyneon™ PTFE Fine Powder TF 2029Z is the recommended grade for yarn applications like sewing yarn, weaving yarn for industrial filters or architecture, sealing materials or dental floss. Furthermore it is the preferred product for electrical tapes in wrapped wire and cable insulations or flat cables.

Processing Recommendations

3M™ Dyneon™ PTFE Fine Powder TF 2029Z can be processed by standard paste extrusion methods, which means the processing of the fine powder together with a suitable lubricant to prevent excessive shearing of sensitive PTFE particles during extrusion. To achieve optimum extrudate quality, all processing parameters such as temperature settings, extrusion pressure, lubricant content, extrusion rate and profile dimensions must be carefully balanced.

The fine powder should be mixed with a suitable lubricant, stored for at least 24 hours at a minimum temperature of 25 °C and compacted into a pre-form, which is then extruded through a die on a ram-type extruder to produce rods or profiles. Tapes are manufactured by calendering the rod which still contains lubricant. The lubricant is then evaporated by a suitable drying technique and the tape can be stretched.

In the case of yarn production, the calendered tape is sintered and stretched to achieve high tensile yarn products.

During paste extrusion the round fine powder particles get fibrillated and the extrudate builds up its mechanical green strength. In the following sintering step the particles fuse together and the voids are closed.

The reduction ratio (RR) is defined as the result of the cross-section of the extrusion cylinder divided by the cross-section of the extrusion die. It is an important processing parameter for paste extrusion, which influences the extrudate quality.

Storage and Handling

3M™ Dyneon™ PTFE Fine Powder TF 2029Z can be stored for a relatively long period of time provided it is kept in a clean, dry place at a temperature of less than 19 °C to safeguard free-flowing properties. Careful handling of fine powder is recommended because it is relatively shear-sensitive. Excessively sheared particles usually result in extrudate defects.

Safety Instructions

Follow the normal precautions observed with all fluoropolymer materials.

Please consult the Material Safety Data Sheet and Product Label for information regarding the safe handling of the material. By following all precautions and safety measures, processing these products poses no known health risks. General handling/processing precautions include: 1) Process only in well-ventilated areas. 2) Do not smoke in areas contaminated with powder/residue from these products. 3) Avoid eye contact. 4) If skin comes into contact with these products during handling, wash with soap and water afterwards. 5) Avoid contact with hot fluoropolymer.

Potential hazards, including release of toxic vapours, can arise if processing occurs under excessively high temperature conditions. Vapour extractor units should be installed above processing equipment. When cleaning processing equipment, do not burn off any of this product with a naked flame or in a furnace.

Delivery Form

3M™ Dyneon™ PTFE Fine Powder TF 2029Z is delivered in powder form.

Packaging size is:

- 25 kg plastic drum

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Important Notice

All information set forth herein is based on our present state of knowledge and is intended to provide general notes regarding products and their uses. It should not therefore be construed as a guarantee of specific properties of the products described or their suitability for a particular application. Because conditions of product use are outside Dyneon's control and vary widely, user must evaluate and determine whether a Dyneon product will be suitable for user's intended application before using it.

The quality of our products is warranted under our General Terms and Conditions of Sale as now are or hereafter may be in force.
Technical information, test data, and advice provided by Dyneon personnel are based on information and tests we believe are reliable and are intended for persons with knowledge and technical skills sufficient to analyze test types and conditions, and to handle and use raw polymers and related compounding ingredients.

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General recommendations on health and safety in processing, on work hygiene and on measures to be taken in the event of accident are detailed in our material safety data sheets.

You will find further notes on the safe handling of fluoropolymers in the brochure "Guide for the safe handling of Fluoropolymers Resins" (download link) by PlasticsEurope, Box 3, B-1160 Brussels, Tel. +32 (2) 676 17 32.

You can also download it with your smartphone using the QR code below.

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We will gladly supply further contact details for our full network of global sales offices. Alternatively, find them here.

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