

3M™ Dyneon™ PTFE Fine Powder TF 2053Z

Product Description

3M™ Dyneon™ PTFE Fine Powder TF 2053Z is recommended for the manufacture of tubing and wire and cable insulations.

Special Features

- Meets ASTM D 4895 Type I, Grade 1, Class C classification
- High molecular weight PTFE powder, produced by emulsion polymerisation
- Wide processing window because of large reduction ratio range
- Relatively high extrusion pressure results in high green strength of extrudate
- Processing by standard paste extrusion methods
- Low friction behaviour
- High flame retardance
- Exceptional temperature resistance
- Very good electrical properties
- Excellent chemical inertness

Properties	Test method	Unit	Value*
Bulk Density	DIN EN ISO 60	g/l	490
Average Particle Size	ISO 13320	µm	450
Powder Flow Properties			free-flowing
Extrusion Pressure (Reduction Ratio 1600)	ASTM D 4895	MPa	65
Reduction Ratio Range	Internal Dyneon method		20 – 1600:1
Tensile Strength	DIN EN ISO 527-3	MPa	32
Elongation at Break	DIN EN ISO 527-3	%	390
Specific Gravity	DIN EN ISO 12086	g/cm ³	2.16

* average values

3M™ Dyneon™ PTFE Fine Powder TF 2053Z

Typical Properties

Product grade with higher extrusion pressure and green strength value than 3M™ Dyneon™ PTFE Fine Powder TF 2071Z.

Typical Applications

3M™ Dyneon™ PTFE Fine Powder TF 2053Z is the recommended grade for the manufacture of high quality tubing and wire and cable insulation up to a reduction ratio of 1600:1. Furthermore it can be used as a binding and hydrophobic agent or additive in battery mass formulations.

Processing Recommendations

3M™ Dyneon™ PTFE Fine Powder TF 2053Z 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 in a pre-form, which can then be extruded through a die on a ram-type extruder to produce either tubing or wire insulation. The lubricant should then be evaporated in a suitable drying oven, and in the next step the tubing or wire insulation should be sintered inline in a suitable sintering oven.

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 2053Z 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. Because of the relative shear-sensitivity of the fine powder, careful handling is recommended. 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 2053Z is delivered in powder form.

Packaging size is:

- 25 kg plastic drum

3M™ Dyneon™ PTFE Fine Powder TF 2053Z

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.

No license under any Dyneon or third party intellectual rights is granted or implied by virtue of this information.

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.



Customer Service

Europe
Phone: 00 800 396 366 27
Fax: 00 800 396 366 39
Italy
Phone: 800 7 910 18
Fax: 800 7 810 19
USA
Phone: +1 800 810 8499
Fax: +1 800 635 8061

Technical Service Fluoroplastics

Dyneon GmbH
3M Advanced Materials Division
Industrieparkstraße 1
84508 Burgkirchen
Germany
Phone: +49 8679 7 4709
Fax: +49 8679 7 5037

Technical Service Fluoroelastomers & Polymer Processing Additives

3M Belgium N.V.
3M Advanced Materials Division
Canadastraat 11,
Haven 1005
2070 Zwijndrecht
Belgium
Phone: +32 3 250 7868
Fax: +32 3 250 7905

Technical Service PTFE Compounds

Dyneon B.V.
3M Advanced Materials Division
Tunnelweg 95
6468 EJ Kerkrade
The Netherlands
Phone: +31 45 567 9600
Fax: +31 45 567 9619

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



Web Site: www.dyneon.eu

Printed in Germany
© Dyneon 2013
Status: Jul. 2013

3M, Dyneon and Dynamar are Trademarks of 3M Company.
All Rights reserved. The present edition replaces all previous versions. Its content is being continuously adjusted to reflect the current level of knowledge. Please make sure and inquire if in doubt whether you have the latest edition.