KYNAR®
FLUOROPOLYMER FAMILY

AN EXTREME WORLD NEEDS EXTREME MATERIALS
World leader in biobased PA11 and other flexible long chain polyamides

Polyether block amide elastomers. Largest supplier in the world.

World leader in PVDF (polyvinylidene fluoride) and flexible fluoropolymers
TECHNICAL POLYMERS – 3 FLAGSHIP BRAND FAMILIES

Polyvinylidene Fluoride (PVDF) resins and copolymers designed for extreme inertness in harsh environments, flame & smoke properties, durability and ease of processing

Thermoplastic elastomers (TPE) designed for unmatched combination of light weight and energy return.

High performance polyamide resins, coatings and additives that deliver toughness, flexibility and chemical resistance.

Biobased grades available
GLOBAL MANUFACTURING, R&D

- **Headquarters**
  - Calvert City, Kentucky
  - Birdsboro, Pennsylvania
  - King of Prussia, Pennsylvania

- **Research Center**
  - Birdsboro, Pennsylvania
  - Serquigny
  - Mont
  - Marseille
  - Pierre-Bénite
  - Colombes (Paris)

- **Fluoropolymer Monomer**
  - Changshu
  - Seoul

- **Polyamide Monomer**
  - Kyoto
  - Zhangjiagang

KYNAR® FLUOROPOLYMER FAMILY
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**EXTREME UV RESISTANCE**

**EASY TO PROCESS**

**HIGH PURITY**

**COMPLIANT, CERTIFIED, WIDELY SPECIFIED**

**RESISTANT TO OZONE, STEAM, GAMMA RADIATION**

**ELECTRO-CHEMICAL STABILITY**

**HIGH WHITENESS**

**OUTSTANDING FLAME AND SMOKE PROPERTIES**

**EXTREME CHEMICAL RESISTANCE – ACIDS, BASES, SOLVENTS**

**OUTSTANDING CHEMICAL RESISTANCE**
FLAGSHIP APPLICATIONS

SUBSEA
Extreme chemical & flex/fatigue resistance

SOLAR
Long life films for KPK® solar module backsheets

POLYMER PROCESSING AIDS
Dramatically improved processing at low doses

WIRE & CABLES
Automotive, Military, Electronics, Plenum, HFFR, Industrial, Specialty

CHEMICAL PROCESS INDUSTRY
High whiteness
High purity
Low Density Foams

LITHIUM ION
Binders and separator coatings - extreme electrochemical stability

CONSTRUCTION
Skyscraper paints & restoration coatings

KYNAR® FLUOROPOLYMER FAMILY
CHEMICAL RESISTANCE

Chemical Resistance of Kynar® Homopolymer Resins vs. Other Well-Known Plastics at 13°C (50°F)

1. Kynar® polyvinylidene fluoride – Type A
2. Polyethylene
3. Polyvinylidene chloride
4. Polyvinyl chloride – Type I
5. Polyester (glass fiber reinforced)
   *More recommended operating temperature of plastic.

Typical Chemicals Handled by Kynar® PVDF
- <80% Acetic Acid
- Hydrochloric Acid
- Bromine (Gas only)
- Hydrofluoric Acid
- Brominated Salts
- Isopropyl Alcohol
- Bromobenzene
- Methyl Alcohol
- Chlorinated Solvents
- Methyl Chloroform
- Chlorinated Solvents
- Nitric Acid
- Chlorine
- Chloroform
- Ozone
- Carbon Tetrachloride
- Chloroform
- Phosphoric Acid
- Chloroform
- Sulfuric Acid
- Hydrobromic Acid
- Sodium Hypochlorite
- Hydrochloric Acid
- Sodium Chloride
- Sulfuric Acid <98%

Mixture of chemicals can cause aggressive by-product.

*Chemical Resistance Chart Available from Arkema Inc.

†For Kynar Fluor® 2800 with no hardening bases (REF: Managing Corrosion with plastics, vol. 10, no. 25 pp 1.14, October 1991. 1
50 YEARS OF PROVEN WEATHERABILITY!
A BROAD PORTFOLIO OF SOLUTIONS

HOMOPOLYMERS
Kynar® 700 Standard Series, High Purity
Kynar® 1000 Series, High Whiteness
Kynar® HSV Series (Customized for Li-ion Battery)
Kynar 500®

ADHESION GRADES
Kynar ADX®
Range of functionalized adhesion grades

UHM™
Ultra high modulus grades

FLEXIBLE POLYMERS
Kynar Flex® series
Heterogeneous copolymers
Ultra flexible grades

PPA
Specific grades for Polymer Processing Aids

FILMS
Multilayer films used primarily for KPK® high performance solar backsheets

LATEX
Kynar Aquatec®
Proprietary Fluoro Latex (upon request)

FOAMS
Low density
Closed, Open cell
A DEEPER DIVE - MAIN APPLICATIONS FOR KYNAR® FLUOROPOLYMERS

- Lithium Ion Batteries
- Architectural Coatings
- Solar Panel Backsheets
- Chemical Processing Industry
Li-Ion BATTERY – WHERE IS KYNAR® PVDF USED?

- **Separator**

- **Electrolyte**

- **Anode**

- **Cathode**

- **LFP, LCO, NMC**

- **Graphite**

- **Lithium ion**

- **Kynar® PVDF**
  - High adhesion Binder
  - High energy density
  - High Voltage

- **Safety & high voltage**

- **Kynar® PVDF Separator Coating**
ULTRA DURABLE COATINGS – SKYSCRAPERS, MONUMENTAL BUILDINGS

- Shanghai Harbor Ring Plaza
- Pyramide du Louvre
- Dallas Convention Center
- Virgin Galactic Spaceport, New Mexico, USA
SOLAR PANEL BACKSHEETS

- Extreme Weather Resistance
- Kynar® Films for KPK™ Patented Solar Backsheet Technology
- Arkema Provides Both Resin and Film
CHEMICAL PROCESSING INDUSTRY (CPI)

Stock Shapes, Tubing, Molding, Plenum Pipe

Semiconductor Industry

Tower Packing, Filters, Compounds

Key Properties of KYNAR® PVDF

- Ultra high purity (semi conductor processing), Pharmaceutical
- Chemical resistance – acids, bases, solvents
- Ozone resistance
- Steam sterilization resistance
- Gamma radiation resistance
- Thermal stability
- High whiteness and retention
WHAT PROBLEMS CAN WE SOLVE FOR YOU?

- Synthesis & Characterization
- Scaleup
- Joint Development
- Marketing & Co-Branding
- Advertising
- Applications Development
- New Market Exploration

www.arkema.com
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