Fluoroplastic

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BROCHURES

1 ENTERPRISE INTRODUCTION

C&F

C&F offers the world's broadest rage of high performance fluorochemical material science solutions including fluoropolymer resins, customer compound,films, tubings and coatings

Fluoropolymers

Everflon Polymers to produce fluoroplastic raw materials on the basis of TFE including PTFE.FEP.PFA.ETFE and PVDF and keep developing the compound of the fluoropolymer raw materials.

Fluoro Solutions

On the basis of C&F R&D dept, we set Techyours new materials in 2013 to supply application tech serive and processing tubing,film, and coatings on the basis of Everflon's raw materials.

Everflon® Fluoropolymer specializes in the production, development, and sales of high-performance fluoropolymer materials. It provides the most basic fluoropolymer raw materials for C&F Group's fluorochemicals. After years of research and development and production, it is currently PTFE, FEP,PFA,ETFE and PVDF materials, and can provide a variety of physical properties of dispersions, granules and powder to meet the needs of various processing applications such as spraying, extrusion, molding, injection molding.

Everflon® high performance fluoropolymers are widely used in various industries, such as electrical and electronic, chemical, mechanical, and medical, food, environmental, and other fields, to produce wire and cable, lining valves, pipes, fibers, coatings, and various products such as film.

Relying on the Group's Quality Assurance Department and Application Laboratory, Everflon® provides the highest quality and stable fluoroplastic raw materials to meet the high quality requirements of middle and high-end customers and reduce the quality of raw materials caused by production and processing. Problems such as rising costs and inefficiency have established extensive and stable cooperative relations with mainstream manufacturers at home and abroad.

3 The C&F Fluorochemicals Products Chain

R22
Chlorodifuoromethane

TFE

R142b
Difluoroethane

VDF

C&F Chemicals established the full fluoropolymers industrial chains from fluorspar to the refrigerant, then fluoropolymers raw materials and extend to many end applications development.

Everflon™ PTFE(Powders,Dispersions)

- Everflon™ PTFE Micropowders
- Techyours™ PTFE Tubings
- Everflon+™ Filled PTFE Compound
- Techyours™ PTFE Industrial Coatings
- Cathay™ PTFE Films&Tapes

Everflon™ FEP(Powders,Dispersions,Pellets)

- Everflon+™ FEP Compound
- Cathay™ FEP Films
- Techyours™ FEP Tubings
- Techyours™ FEP Coatings

Everflon™ PFA(Powders,Dispersions,Pellets)

- Everflon+™ PFA Compound
- Cathay™ PFA Films
- Techyours™ PFA Tubings
- Techyours™ PFA Coatings

Everflon™ ETFE(Powders,Pellets)

- Everflon+™ ETFE Compound
- Cathay™ ETFE Films
- Techyours™ ETFE Tubings
- Techyours™ ETFE Coatings

Everflon™ PVDF(Powders,Pellets)

5 Everflon™ PTFE

Highly cost-effective materials, Everflon PTFE resins are the most widely used fluoropolymers found in many areas of modern life. Resin properties keep insulation, thickness to minimum while tolerating a wide range of temperatures(-180C to 260C) than other insulators. Inert to almost all chemicals, PTFE resins also offer good resistance to most solvents. They are sultable for outdoor use with no detriment to properties from extended exposure to the ele-ments.

Dispersions (D series): Small,negatively charged PTFE particles that impregnate substance to impact PTFE properties.

Fine Powders (F series): White,free flowing powders made by coagulated dispersions of PTFE. Suitable for extru-sion of thin flexible sections

Granular Powders (M series): Fine powders that are molded by first pressing and heating, than sharped into sheets,rods and billets. Suitable to com-pounding and various molding techniques

Applications

Tape and texilie membranes (F)
Hose,tubes,rods and wire coating (F)
Coatings and binders (D)
Additive for resistance and paints (D)
Compound with filters (M)
Sheets, rods,billets and other general molded shapes (M)

Everflon™ Micropowders

Everflon™ Micropowders are lubricants milled to a very fine powder while retaining excellent lubricity properties.

These powders can be compounded in rubber and plastics or dispersed in liquids or greases to improve friction and ewar properties of the base material.

Many grades are used in non-stick surface applications, as extreme pressure additives in oil and grease, and in solvent applications. Lubricant powders offer great advantages over conventional anti-scuff agents in printing inks, permitting quick solvent release, faster printing speeds, and excellent print gloss.

Applications

Anti-scuff agent for ink and paint (MV3)
Thermoplastic and elastomers additive (MV5)
Additive for coating and finishes (MV3)
Oil and grease additive (MV1)
Dry lubricant (MV1)

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Everflon® FEP

Everflon®
FEP Resins

Everflon® FEP is a melt moldable fluoro-polymer. It has excellent thermal stability, electric properties, abrasion resistance, and long-term weather-ability. It is widely used for the products of wire insulation, cable jackets, tubes.

Excellent characteristic

- Heat resistance
- Chemical resistance, permeability barrier
- Electrical characteristics (high frequency)
- Optical property
- Nonadherence
- Flame retardant

Applications

Everflon™ FEP has excellent heat resistance, chemical resistance and electrical properties as well as PTFE. It is designed to be compatible with various melt forming methods.

- Wire coating
- High speed wire insulation
- Tube
- Extrusion, blown film
- Pipe lining

Feature

- A copolymer of tetrafluoroethylene and hexafluoropropylene.
- It has a low dielectric constant and low dielectric loss tangent due to its low polarity molecular structure.It is used in the field of information technologies and communications by taking advantage of this characteristic.
- The strong C-F bond exhibits heat resistance, inertness for almost all chemicals and excellent weather-ability.
- It has excellent flame retardancy (limiting O2 index 95 vol%, UL94V-0).
- Coefficient of friction is so small that it can gain the excellent slipperiness.
- Surface energy is also so low that it can excel in water and oil repellency, nonadherence properties.

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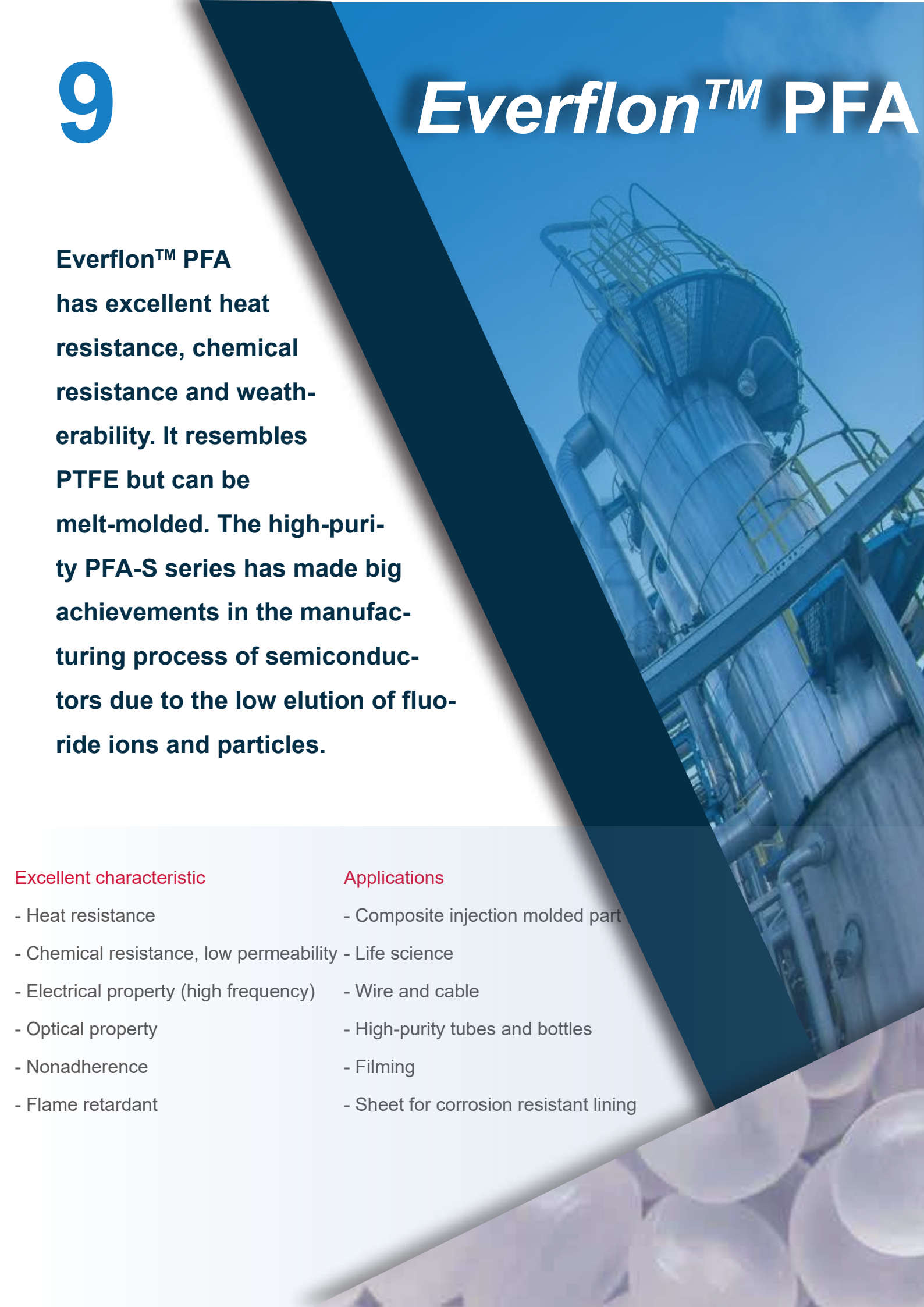
Everflon™ PFA



Everflon™ PFA has excellent heat resistance, chemical resistance and weatherability. It resembles PTFE but can be melt-molded. The high-purity PFA-S series has made big achievements in the manufacturing process of semiconductors due to the low elution of fluoride ions and particles.

Excellent characteristic

- Heat resistance
- Chemical resistance, low permeability
- Electrical property (high frequency)
- Optical property
- Nonadherence
- Flame retardant

Applications

- Composite injection molded part
- Life science
- Wire and cable
- High-purity tubes and bottles
- Filming
- Sheet for corrosion resistant lining

Everflon™ PFA Resins

Everflon™ PFA

Features

- A copolymer of tetrafluoroethylene and perfluoroalkylvinyl ether.
- The strong C-F bond exhibits heat resistance, inertness for almost all chemicals and excellent weatherability.
-Retains mechanical strength at a wide temperature range from-200°C to 260°C.
- It has been used in many semiconductor sites due to its highly purity by stabilizing treatment of end groups.
- It is excellent in electrical insulation and high-frequency characteristics. It effectively works in the field of electronics such as high speed communication cables.
- It has excellent flame retardancy (limiting O2 index 95 vol%, UL94V-0).
- Various melt molding methods are available such as extrusion molding, injection molding, transfer molding, and compression molding.

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Everflon™ ETFE

Everflon ETFE has the best mechanical strength and radiation-resistance among fluoropolymers. It is melt moldable and exhibits excellent processability and mechanical properties with great thermal, chemical and electrical properties. It is used for applications that require both mechanical strength and thermal, chemical, and electrical properties.

Excellent characteristic

- Chemical resistance, permeability barrier
- Weatherability
- Electrical property
- Optical property
- Flame retardant

Everflon™ ETFE Resins

Feature

- A copolymer of tetrafluoroethylene and ethylene consisting of carbon, hydrogen and fluorine atoms.
- It has the highest mechanical strength among fluororesins.
- It has the best radiation resistance among fluororesins.
- Flame retardant (limiting O^2 index 31 vol%).
- It is not attacked by acids, alkalis or organic solvents.
- This molecular structure has a low polarity and exhibits a low dielectric constant and a low dielectric loss tangent.
- Melt molding methods are available such as extrusion molding, injection molding and compression molding.
- It has higher melt fluidity than the other fluororesins and is suitable for high speed extrusion use.

Applications

- Wire and cable coating
- Electrical components (connectors, sockets)
- Fuel tube (low permeation)
- Mould releasing film
- Pipe lining
- tubing and pipe
- Fuel hoses

12 Everflon™ PVDF

PVDF is a highly non-reactive and pure thermoplastic, and partially fluorinated. PVDF is a specialty plastic material in the fluoropolymer family. It is used generally in applications requiring the highest purity, strength, and resistance to solvents, acids, bases and heat and low smoke generation during a fire event. Compared to other fluoropolymers, PVDF has an easier melt process because of its relatively low melting point of around 338 °F. It is commonly used in the chemical, semiconductor, medical and defense industries, as well as in lithium ion batteries. Applications in chemical processing rely on PVDF to withstand heat and pressure, aggressive chemicals, mechanical stress, and abrasive particles.

Feature

- Chemically inert to most acids, aliphatic and aromatic organic compounds,chlorinated solvents, and alcohols
- Very high purity
- Abrasion resistance
- Low coefficient of friction
- Unaffected by ultraviolet radiation
- Excellent intrinsic fire resistance
- Physiological harmless and approved for contact with food products
- Good capability for machining and easily joined by welding.

Applications

- Chemical Processing
- Transport and storage systems
- Oil and Gas
- Aerospace
- Fuel cells
- Semiconductor/Microelectronics
- Sensors
- Biotechnology and Pharmaceutical

Everflon™
PVDF Resins

Everflon+™ Melt Compounds

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Everflon™ melt processable compounds are based on fluoropolymer resins FEP,PFA,ETFE,MFA and PVDF.

- Color concentrates
- Foam concentrates
- Cross-linkable compounds
- Reinforced compounds
- Flexible compound
- Conductive-anti static compound

Features

-Color concentrates: Superb surface finish, color consistency and dispersion even at high speed extrusion rates.

-Foam concentrates: Designed for gas injection foaming and chemical foaming used for manufacture of LAN and coaxial cables. The properties of a foamed insulation help minimize signal loss, enhance high-speed data transmission, and save weight and material.

-Cross-linkable compound: Increase mechanical properties such as scrape abrasion, cut-through resistance and tensile strength, especially at elevated temperatures.

Conductive/anti-static compounds: Control heat an static electricity.Wire coated with a onductive fluoropolymer may be used for freeze protection and process temperature control.

Reinforced compound: Incorporate glass and mineral fillers for enhanced dimensional stability, abrasion resistance, shrinkage resistance and thermal conductivity characteristics.

Flexible compounds: Modified ETFE.PFA and FEP and a proerietary fluoroelastomer maintain many desirable preperties in a more flexible form. Heat resistance can be enhanced by radiation curing and can be cross-linked without the presence of curing agents or co-agents.

Everflon+™ Filled PTFE Compounds

Composed of pigments and fillers such as glass carbon graphite and metal powders(bronze and molybdenum disulfide), Everflon+ Filled PTFE compounds are molding powders that enhance wear resistance, creep resistance, thermal conductiity and electrical conductivity over virgin PTFE resins. Compounds also preserve several properties unique to PTFE including low coefficient of friction,excellent chemical resistance and a wide service temperature range.

Features

-Pelletized(Free-Flow) Compound: Higher bulk density and mold flow properites;Improve key physical properties and product uniformity;Easily processed in automatic molding equipment

-Non-Pelletized(Low-Flow) Compounds: Manufactured in powder form;Suitable for applications that demand the highest mechanical properties such as thick-walled billets.

Applications

Pipe and valve seals

Bearings,gaskets, valve seals and sealing rings

Crankshart seals

Machined parts used in chemical processing and oil exploration

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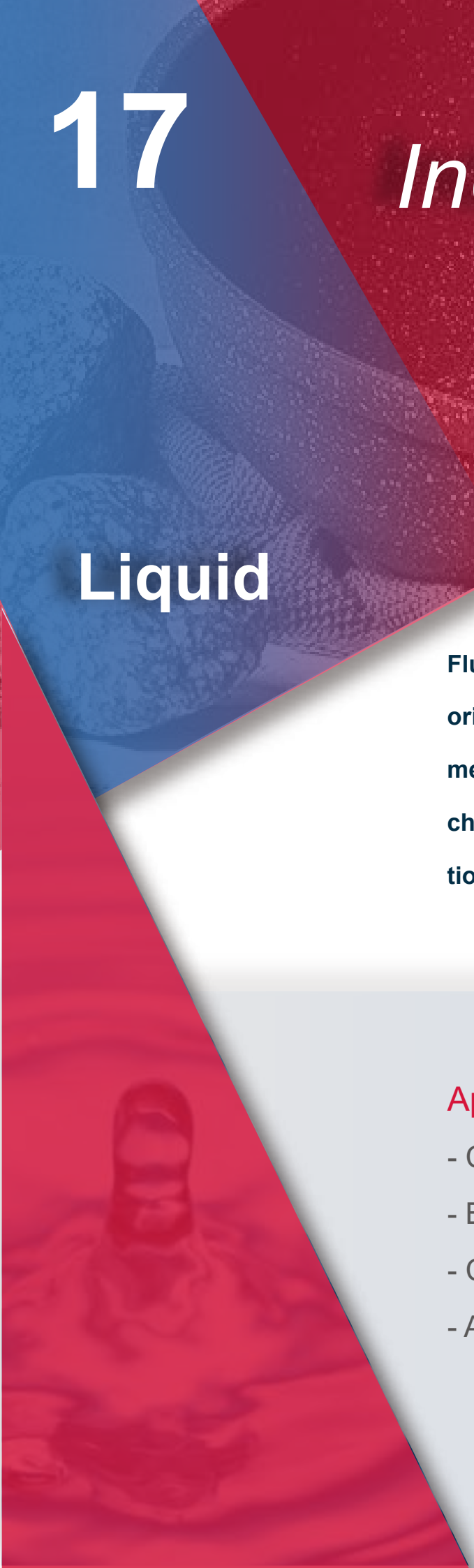
Techyours™ Industrial Coating

Liquid

Fluoropolymer coatings remarkably improve or modify original properties of several surfaces. C&F fluoropolymer coatings have solutions for giving heat resistance, chemical resistance, non-stick property and low friction.



Applications

- Cookware
- Bakeware
- Chemical resistant lining
- Automobile parts

Techyours™
Industrial Coating
Powders

Benefits of Fluoropolymer Coatings

Surface modification technologies has been notable as strategic interest in various fields. Fluoropolymer coatings can add the following significant properties to the surface.

- Heat resistance
- Chemical resistance
- Corrosion resistance
- Non-stick property
- Low friction

Types

- Water base non stick coating (P4 series)
- Electrostatics spray powder (JP series)
- Roto Molding Powder (GS series)

19 Techyours™ Tubings

Fluoropolymer Extrusion

-100% virgin grade high performance resins used to resist stress cracking

-Chemically inert to most industrial chemicals and solvents

-High thermal stability

-Excellent UV transmission

-Low permeability

-Moisture absorption nearly zero

-FDA compliant for food contact

-Non-flammable

-Self Extinguishing

-Superior electrical insulation properties

Excellent characteristic

- Chemical resistance, permeability barrier
- Weatherability
- Electrical property
- Optical property
- Flame retardant

C&F excels at extruding tubing from various performance materials including PTFE, FEP, PFA, ETFE, PEEK, PVDF, and more. These materials surpass others when it comes to lubricity, temperature and chemical resistance, dielectric insulation, flexibility, and mechanical strength. Our extruded tubing products can be found in almost every industry worldwide.

Applications

- Chemical process
- Aquatic
- Laboratory applications
- UV water purification systems
- Ground water monitoring
- Ground remediation
- Food processing
- Electrical insulation
- Telecommunications
- Conduit
- Heat Exchangers
- Automotive Paint Spray

21 Cathay™ Films

Fluoropolymer films are state of the art materials providing to parts or production processes outstanding chemical resistance, transparency, weather resistance, heat resistance, water absorption, electrical characteristics amongst others. They are the best solution for a growing number of industries such as electronic, machine, automotive and semiconductors.

Applications

The range of Cathay Films are suitable for use in a wide variety of applications such as anti-corrosive linings, composite part mold release, industrial roll covers, circuitry, pharmaceutical cap liners, sterile packaging, cable insulation, hot melt adhesive, microphone electret membranes, photovoltaic cell glazing (back sheet), anti-graffiti coverings, erasable surface, coverings, automotive airbag systems, fuel hose permeation barrier, hot melt adhesive and more.

Cathay films adapt to conventional processes and secondary operations such as heat seal, thermoforming, welding, and heat- bonding, lamination, die-stamp. Each of the film grades is available in various, size, weight and thicknesses to meet the most specific requirements

Benefits of fluoropolymer films

Used as components, or in manufacturing processes, high-performance fluoropolymer films are considered because of their outstanding resistance to high temperature and chemically aggressive environments. They meet the current demands of an increasingly diversified and sophisticated number of industries such as electronic, machine, automotive and semiconductors:

- Semiconductors manufacturing equipment require chemical-resistant liners for etching bath, restraining process downtime

- Pharmaceutical packaging producers are developing next-generation drug containers, improving barrier resistance of drug delivery systems, cap liners, and plunger laminates

- Construction and infrastructure segment players are continuously seeking for sustainable solutions such as water-repellent architectural fabrics, anti-graffiti coverings, protection against extreme corrosion, fading or cracking.

Features of fluoropolymer films

To meet the growing demand for high-performance films, C&F has developed a range of films and sheets based on the fluorine technology. They allow for their users to benefit from the outstanding fluoropolymers inherent properties:

- low coefficient of friction
- chemical resistance
- optical transparency
- weather and UV resistance
- heat resistance
- low moisture absorption
- non-flammable
- dielectric properties

C&F

Manufactured by Hubei Everflon Polymer Co.,Ltd

C&F Industrial Park. Caidian. Wuhan. China
+86-27-8488-8055 Info@everflon.com