

**Guide
to
Whitford
Industrial
Products
9th edition — 2010**

Makers of the largest, most complete line
of fluoropolymer coatings in the world

INTRODUCTION

Whitford Corporation was founded in 1969 to develop and market fluoropolymer and other high-performance coatings.

Some have asked, “What are high-performance coatings?” In simple terms, they are low-friction, dry-lubricant materials that achieve remarkable synergy by combining the capabilities of two types of engineering plastics. Fluoropolymers, with the lowest coefficient of friction of any known solid, are combined with high-temperature organic polymers to provide unique and highly versatile combinations of properties.

These tough lubricating coatings can operate successfully at temperature extremes which, at the low end, would render ordinary fluid lubricants too high in viscosity and, at the high end, char them to ash.

From the beginning, Whitford developed these matrix coatings for industrial applications. Whitford’s original product was Xylan® 1010, a novel dry-film lubricant. Since then, many new Xylan coatings have been developed as well as Xylac® high-temperature decorative enamels, Xylar® ceramic coatings, Excalibur®, HALO®, Quantum2®, QuanTanium®, Eclipse® and Eterna® reinforced coatings, Dykor® barrier coatings, Resilon® flexible-finish coatings, and Ultralon® PTFE nonstick coatings. Design engineers will find these products to be among the most useful engineering tools available.

Whitford coatings can be used for a variety of applications including: consumer, industrial, automotive, flexible finishes, dip/spin, off-shore oil industry, bearings, molds, garden tools, water/wastewater industry, reprographics, commercial bakeware, textiles, etc.

It is important to note that Whitford formulates, manufactures, and markets high-performance coatings. We do not apply the coatings; rather, we instruct you as to the correct application methods or refer you to professional coating applicators.

Whatever your coating problem, Whitford probably has the right product to solve it. If not, we will work closely with you to develop the coating that will. This booklet provides an overview of products available at the time of publication. Additional information is available in various publications and may be obtained by contacting your Whitford representative or by going to our website at whitfordww.com. You can also email us at sales@whitfordww.com.

Whitford makes the largest, most complete line of fluoropolymer coatings in the world. Thank you for your interest in our products.

MANY GOOD REASONS

Ten reasons why you should use Xylan Coatings

Xylan coatings differ from traditional fluoropolymer coatings in one very important aspect — they are composite materials. Lubricants with the lowest known coefficient of friction are combined in a matrix with the newest high-temperature organic polymers. These “plastic alloys” can be formulated to provide unique and desirable properties:

- 1) Low friction: CoF as low as 0.02.
- 2) Wear resistance: even under extreme pressures.
- 3) Corrosion and chemical resistance in most environments.
- 4) Weather resistance: against sunlight, salt water and road chemicals.
- 5) Wide temperature operating range: from -420° to +550°F (-250° to 285°C).
- 6) Flexible curing schedule: ambient to 750°F (400°C).
- 7) Wide color range: color code your product.
- 8) Pliability: Many Xylan coatings will bend freely and repeatedly without breaking.
- 9) Machinability: apply multiple coats of Xylan coating (most formulations) and mill to specification.
- 10) Excellent adhesion: to most metals, plastics, ceramics, wood. Even to itself (most formulations).

COATINGS BY CATEGORY

Automotive: 1010 (pg 10), 1610 (pg 20), 5200, 5230 (pg 24), 5420 (pg 25), Xylan1225, Resilon 2020, Resilon 2120 (pg 34). For more options, ask for Whitford's "Simplified guide to superb automotive coatings."

Aeronautics: 1010, 1014 (pg 10), 1052 (pg 11), 1400RC (pg 16), 1840 (pg 23).

Commercial Bakeware/Food Processing: 1756 (pg 21), Xylan XLR (pg 22), 8810, 8840 (pg 23), Xylan 80-510, 80-511 (pg 29), 80-550 (pg 30); 26P (pg 31). For more options, ask for Whitford's "Guide to Whitford Coatings for Consumer Products."

Electrical: 1010, 1014 (pg 10), 1070 (pg 11), 1270 (pg 13), 1400RC (pg 16).

Garden Tools: 1010, 1014 (pg 10), 1070 (page 11), 1270 (pg 13), 1400 (pg 16), 1424 (pg 17), 1454 (pg 18), 1514, 1585S (pg 19), 13P (pg 31).

Machinery: 1010 (pg 10), 1052, 1070 (page 11), 1270 (pg 13), 1400RC (pg 16).

Mold Release: 1010, 8110 (pg 10), 1700 PFA, 1756 FEP (pg 21), Xylan XLR (pg 22), 1840, 8840 (pg 23), Powder Coatings (pg 29-31), Chemlon 29S.1006 (pg 37), Xylan 7050/7252/7353 (pg 37).

Medical/Pharmaceutical: 8110 (pg 10), 8820HR (pg 23), Dykor 202 (pg 28), Dykor 631 (pg 36), Ultralon OC-625 (pg 36).

Offshore/Petroleum: 1000 Series (pg 10-11), 1212, 1213 (pg 12), 1300 Series (pg 14-15), 1400 Series (pg 16-18).

Construction: 1400RC (pg 16), 5250 (pg 25), 5251, 5901 (pg 25), 8500LC (pg 36).

Chemical: Xylan 1000 Series (pgs 10-11), Liquid High-Build Coatings (pg 28), Powder Coatings (pg 29-31).

Reprographics: 1700 Series (pg 21), Xylan XLR (pg 22), 80-511 (pg 29), I-10008-3, 90-2002B-2, 75-4001/4002-1/4003-1, I-10408B (pg 38).

Water/Wastewater Industry: 1010/8110, 1014 (pg 10), 1237 (pg 13), 1424 (pg 17), 5214 (pg 24), 5250 (pg 25).

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TRADEMARKS

Name recognition and consequent quality perceptions are an integral part of any marketing program — be it local or, as Whitford's program is, worldwide.

We currently use seventeen trademarks around the world. To protect the marks described below we have registered them or have applied to register them in over forty countries.

- **Whitford®**: registered throughout the world either as the word itself, or where allowed, in our own distinctive logotype style.

- **Xylan®**: the umbrella trademark for most of our products. Registered in most industrial countries around the world, Xylan is used to identify our low-friction, wear-resistant composites of fluoropolymers and reinforcing binder resins.

- **Xylan® XLR**: this trademark identifies our industrial longer-lasting release coating useful for molds, commercial bakeware and reprographic applications.

- **Xylac®**: this trademark is used to identify our high-temperature decorative materials most often utilized as exterior coatings for cookware.

- **Dykor®**: used to describe our fluoropolymer powders and dispersions; “thick-film linings”.

- **Xylar®**: used to identify our inorganic coating materials capable of operating at extremely high temperatures. When used as basecoats, these materials offer increases in resistance to salt spray by several orders of magnitude.

- **Excalibur®**: our premium cookware coating system consisting of arc-sprayed stainless steel as a basecoat. A two- or three-coat fluoropolymer release coating on top creates the toughest, longest-lasting, most durable nonstick in the world.

- **Ultralon®:** purchased from ICI Americas in 1990, the Ultralon Series has many applications in both industrial and consumer nonstick markets.

- **Quantum and Quantum2:** Whitford's patented internally reinforced multicoat systems used in many consumer and industrial applications.

- **QuanTanium®:** an internally reinforced, water-borne, multicoat nonstick system. It incorporates a unique mix of titanium particles blended into the coating to give it superior scratch resistance compared to conventionally reinforced coating systems.

- **Eclipse®:** a three-coat, internally reinforced nonstick system that is different from all others. The reinforcing agents are some of the hardest materials known. They form a web-like matrix that helps hold all the other materials in the system together, further strengthening the ultimate coating.

- **HALO®:** a three-coat internally reinforced nonstick system with a unique formula of special additives that absorb heat from the stovetop more quickly and distribute it across the surface of the pot or pan more evenly.

- **Resilon®:** identifies the series of water-based user-friendly coatings designed to improve the performance of automotive sealing systems, particularly where release and noise reduction are required.

- **Eterna®:** the longest-lasting nonstick system in the world.

- **Fusion®:** an improved version of ceramic nonstick coatings, made without PTFE and PFOA.

- **Skandia®:** a durable nonstick roller coating with a grip coat to eliminate the need for a primer.

- **Skandia Extreme®:** a high-release topcoat for roller coating or a more advanced spray single-coat, based on Eterna technology.

EXCALIBUR

Developed for Cookware, Embraced by Industry

General Information

Excalibur is the toughest, longest-lasting, most durable nonstick coating in the world.

Why is Excalibur so much better than other nonsticks? Because it is reinforced with stainless steel.

Most coatings are just what the word suggests: a coating applied over a metal substrate — a surface finish. Excalibur is a *system*. Stainless steel is arc-sprayed onto the surface, forming a series of “peaks” and “valleys”. Then the stainless-steel matrix is impregnated with premium nonstick coatings. The result: a coating system with the toughness of stainless steel and the “release” properties of the best nonstick — the most durable coating system ever created.

Though developed for cookware, Excalibur’s value for industrial applications became apparent immediately. Excalibur is the obvious material to prolong the life of components operating under conditions of high wear and abrasive environments.

Excalibur’s properties can be tailored to satisfy special criteria by interchanging the coating components of the system. The limits of Excalibur’s capabilities have only begun to be defined.

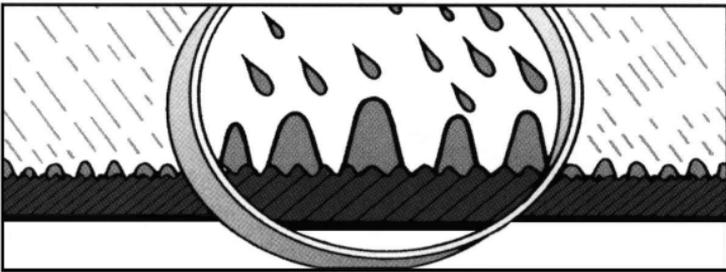
The Product

Excalibur: A licensed product of Whitford. If you are interested in having the most durable nonstick coating system in the world on your product, please contact us.

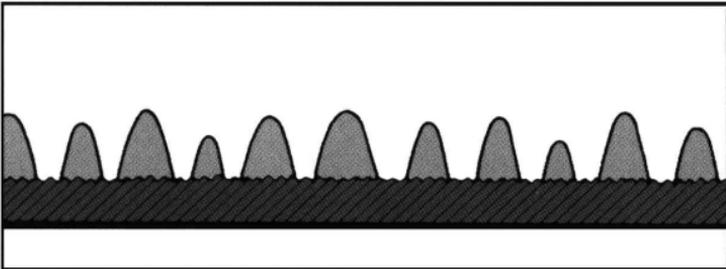
Why Excalibur is Better



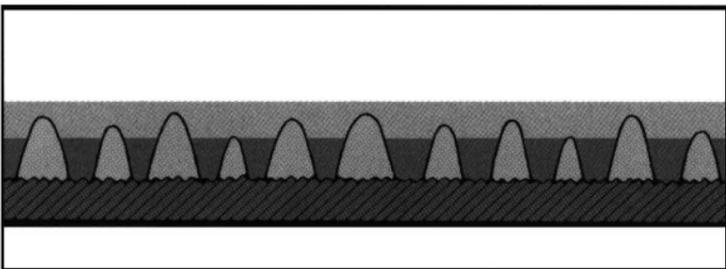
1. The surface of the substrate is blasted with an abrasive to roughen it, so other elements in the Excalibur process adhere to it better.



2. Then, the most important part: white-hot particles of a special stainless steel are sprayed onto the roughened surface.



3. The particles cool and harden, bonded to the surface, forming a series of “peaks” and “valleys” providing a permanent base for the nonstick coatings.



4. Several coats of tough fluoropolymers fill the “valleys” and cover the “peaks,” held permanently in place by the special stainless-steel “peaks.”

This unique process of reinforcing the coating makes Excalibur different from and superior to all other stainless-steel nonstick finishes. It’s why Excalibur is as durable and long lasting as modern technology can provide.

XYLAN 1000 SERIES

Optimum Combination of Physical,
Chemical and Mechanical Properties

General Information

The Xylan 1000 Series has long been the benchmark of our line of industrial coatings. They reside in a product category known as “extreme performance coatings”.

They are, first and foremost, lubricants; however, they have many desirable secondary properties. They can “work” under heavy loads, at high temperatures, in chemical and corrosive environments, and combinations thereof.

The Products

Xylan 1006: contains the greatest percentage of PTFE lubricant relative to all other Xylan 1000 Series coatings. It is unaffected by a broad range of chemicals and has excellent nonstick properties. Best suited for industrial/mechanical applications which do not require wear and abrasion resistance as the primary film functions, but will benefit from the abundance of PTFE lubricant in the coating.

Xylan 1010: resin-bonded, dry-film lubricant/nonstick coatings. They may be used on any part or component to reduce friction, prevent scoring and galling, or provide secondary lubrication in the event of failure of the primary (conventional) lubricant. As the coating also has excellent chemical resistance and the greatest operating temperature range of any fluoropolymer coating, Xylan 1010 is the best low-friction coating on the market today.

Xylan 8110 is the FDA-compliant version of Xylan 1010.

Xylan 1014 and 1015: compared to Xylan 1010, Xylan 1014 and 1015 fastener-class coatings contain significantly more bonding resin relative to its content of PTFE lubricant. Altering the formula in this manner produces finishes which are harder, more abrasion-resistant, glossier, and less porous. Frictional values remain low and very predictable.

Xylan 1052: formulated for high-pressure, low-speed wear applications, Xylan 1052 provides long-term lubrication for bearing surfaces subjected to extreme pressures: up to 150,000 psi (10,500 kg/cm²). The coating utilizes a unique dual lubrication system of PTFE and MoS₂. Superior to “moly” greases which wash away and PTFE coatings which “cold flow”, resin-bonded lubricants in Xylan 1052 stay on the job, even in harsh chemical environments.

Xylan 1053: is a dry-film lubricant available in a dark olive green that was developed for use on titanium.

Xylan 1054: uses MoS₂ and graphite as the lubricants. Designed for long-term lubrication and wear applications in which the properties of PTFE are not required.

Xylan 1058: uses FEP instead of PTFE as the lubricant and is equivalent to DuPont’s 958-200 series.

Xylan 1070: fastener-class coating provides lubrication with extra corrosion protection. Xylan 1070 is used to coat large studs (B7), nuts, flanges, and related hardware for sub-sea and splash-zone service. Because of its predictable, low-friction properties, less “make-up” torque is required to produce the specified tension. During assembly, clamp loads are increased; “scatter” is reduced. In fact, the frictional characteristics are the most predictable of any lubricant, coating, or plating used on bolting. The low-friction properties also reduce “break-out” torque, which allows removal of bolts with a wrench instead of a blowtorch.

Xylan 1088: is a reinforced, solvent-borne, dry-film lubricant for any wear surface to reduce friction, prevent scoring and galling and provide secondary lubrication. Has good low-friction and excellent chemical-resistant properties.

XYLAN 1200 SERIES

Economical, Dependable
Lubrication and Release

General Information

Although the chemical compositions of Xylan 1200 Series coatings differ, their common bond is economy relative to competitive products. The lubricants utilized in this series fulfill a diverse range of needs: traditional PTFE lubrication; FEP nonstick; even “moly” (MoS_2) for high-pressure applications.

The Products

Xylan 1203: a durable silicone resin system for mold release.

Xylan 1212: a waterborne, thin-film barrier coating with excellent corrosion resistance, ideal where tolerance is critical and lubrication unnecessary.

Xylan 1213: a waterborne, dry-film lubricant designed for high-pressure/low-speed applications. When combined with Xylan 1212 offers good corrosion and abrasion resistance.

Xylan 1220: similar in composition to the 1000 Series, it has excellent chemical resistance and the ability to “work” at elevated temperatures. There are two principal distinctions between 1220 and its 1000 Series cousins: fluorinated ethylene propylene (FEP) replaces PTFE as the low-friction polymer and the carrier is a water/solvent blend rather than 100% solvent. These changes in chemistry yield a dry film with enhanced non-wetting and nonstick characteristics and, compared to Xylan 1010, a cost saving of at least ten percent.

Xylan 1220 may be applied via dip-spin or conventional air spray, adding to its utility.

Resilon 1225: low-friction coating formulated for elastomers and plastics.

Resilon 1237: low-cure, low-friction coating formulated for application to temperature-sensitive elastomers and plastics. Resilon 1237 provides good adhesion, excellent lubricity, and moderate chemical resistance. It also exhibits a high degree of flexibility and elongation. Resilon 1237 is a compliant coating with <3.5 pounds per gallon (<420 grams per liter) of VOCs, and may be applied by dip-spin, tumble-spray or conventional air-spray techniques.

Xylan 1270: is a low-cost alternative to Xylan 1070, but with less lubrication. For fasteners where reduced break-out torque is not necessary. Xylan 1270 is the European version of the US 1400 Series.

XYLAN 1300 SERIES

Extraordinary Abrasion
and Chemical Resistance

General Information

Xylan 1300 Series coatings derive their properties from two of the best engineering polymers available today: polyphenylene sulfide (PPS) and polytetrafluoroethylene (PTFE).

PPS is considered second only to PTFE in terms of chemical resistance at elevated temperatures. PPS also contributes bonding power and abrasion resistance.

PTFE adds its non-wetting properties and nearly universal chemical resistance. In concert, they produce coatings which are virtually unaffected by solvents to 400°F (205°C) and resist attack from most acids and alkalis. They are not recommended for stainless steel.

The Products

Xylan 1305/1315: this two-coat system offers premium performance from a thin-film coating. This system produces a barrier which shields valves, valve bodies, and associated CPI hardware from chemical attack. It is best utilized in chemical processing operations running at elevated temperatures.

Xylan 1311: tough, economical, single-film PPS/PTFE coating. Xylan 1311 contains a small percentage of PTFE lubricant. Recommended for use when abrasion resistance is the primary characteristic sought and lubrication and/or non-wetting properties are secondary considerations.

Xylan 1331: abrasion-, corrosion- and chemical-resistant coating with a high percentage of PTFE for a lubricious, nonstick surface.

Xylan 1390/881 Black: a waterborne coating which utilizes graphite as the lubricant rather than the PTFE generally associated with Xylan fluoro-polymer coatings. This material was developed for use on parts operating in “wet wear” conditions, and/or when a coating with a slightly higher coefficient of friction is indicated. (For example, engine-head bolts coated with a normal PTFE finish may be “over-torqued,” leading to premature failure of the bolt and costly repairs to the engine.)

Another use for this product is in the tobacco industry, where the use of PTFE is prohibited.

Xylan 1391: a primer/sealer which does not contain any lubricant. May be used as a stand-alone material for excellent corrosion resistance or as a primer with PPS/PTFE topcoat. Combined, they provide an excellent two-coat system for the Chemical Process Industry (CPI).

XYLAN 1400 SERIES

Tough Coatings for Tough CPI Applications

General Information

Xylan 1400 Series coatings are innovative polymer products originally formulated to prolong the service life of CPI equipment and hardware by providing protection from chemical attack and mechanical damage. Several formulae are now available: one which acts as a barrier between the base metal and hostile environments; two which are electrically conductive; and several which are good dry-film lubricants.

The Products

Xylan 1400RC: (RC indicates “recoatable”) developed to protect large fasteners and CPI hardware from hostile chemical and corrosive environments, but at a lower cost than Xylan 1000 Series coatings, which does not mean lower quality.

Xylan 1400RC has good salt-spray resistance, excellent acid-rain resistance, and protects equipment from chemical exposure (especially those with high pH). Although it contains a small percentage of PTFE lubricant to facilitate installation and prevent galling, we consider Xylan 1400RC a barrier coating rather than a dry-film lubricant.

Xylan 1400RC/873: (Anti-Static Black) Whitford chemists have modified the original formula by incorporating electrically conductive additives into this coating. The resultant matrix has a measured resistance of <35K ohms measured on glass coupons @ 0.7 to 0.9 mils (17-23 microns) dry-film thickness. Its use, therefore, is appropriate for industrial/mechanical applications which will benefit from the ability of the coating to dissipate static electricity.

Xylan 1401RC/873: a conductive black coating similar to 1400RC/873. This variation has less electrical resistance (better conductivity): <11K ohms measured on glass coupons @ 0.7 to 0.9 mils (17 - 23 microns) dry-film thickness.

Xylan 1404: fastener-class coating that has both PTFE and graphite in a phenolic binder useful for situations of extreme chemical resistance.

Xylan 1420: fastener-class coating that is a waterborne/VOC-compliant, resin-bonded, thermally cured, single film. Xylan 1420 has good salt-spray resistance, and protects equipment from chemical exposure (especially those with high pH).

Although it contains a small percentage of PTFE lubricant to facilitate installation and prevent galling, we consider Xylan 1420 to be a barrier coating rather than a dry-film lubricant.

Xylan 1421: extreme performance coating material is a waterborne/VOC-compliant, resin-bonded, dry-film lubricant, nonstick coating. It may be used on any component to reduce friction, prevent scoring and galling, or provide secondary lubrication in the event of failure of the primary (conventional) lubricant. This coating also provides excellent chemical resistance.

Xylan 1424: fastener-class coating material that is a waterborne/VOC-compliant, resin-bonded, thermally cured, single-film, dry lubricant. It is primarily formulated for use on fasteners to prevent corrosion and facilitate make-up torque.

Xylan 1425: extreme pressure coatings which are waterborne/VOC-compliant and are formulated for high-pressure, low-speed applications. Xylan 1425 provides long-term lubrication for bearing surfaces subjected to extreme pressures: up to 150,000 psi (10,500 kg/cm²). The coating uses a unique dual lubrication system of PTFE and MoS₂. Superior to “moly” greases which wash away and PTFE coatings which may have the potential to “cold flow”, resin-bonded lubricants in Xylan 1425 stay on the job, even in harsh chemical environments.

Xylan 1427: extreme corrosion- and chemical-resistant coating that is also a waterborne/VOC-compliant, resin-bonded, thermally cured, single-film, dry-film lubricant. Primarily formulated for use on fasteners to prevent attack from a broad spectrum of chemicals and corrosives. Provides extra corrosion protection while retaining all attributes associated with a composite coating.

Xylan 1440: may be used in a multitude of traditional low-friction and wear applications to 400°F (205°C). In addition to its mechanical properties, Xylan 1440 is very resistant to the chemical families associated with the majority of industrial applications, i.e., automotive fluids (gasoline, anti-freeze, motor oil), organic solvents, acids and caustics. It is well suited not only to lubricate, but to protect automotive components, valve mechanisms, pipe plugs and chemical-processing industry (CPI) hardware from hostile operating environments.

Xylan 1454: uses FEP rather than PTFE for improved release characteristics. Xylan 1454 is ideal for applications requiring good release, chemical resistance, and corrosion protection. Xylan 1454 is similar to DuPont's Teflon® 954.

XYLAN 1500 SERIES

Function with Flair

General Information

Xylan 1500 coatings are decorative enamels with low-friction properties and stain resistance which can operate at elevated temperatures. Following a simple degreasing operation, they bond tenaciously to steel, aluminum and other materials such as plastics. Coating processors speak highly of their ease of application and forgiving nature.

Unlike many fluoropolymer finishes, coatings in this series may be produced in virtually any color, including pastels, bright white, and metallics. This allows designers to match coated metal components to molded plastic parts on the same product. With good resistance to ultraviolet (UV) light, outdoor applications should also be considered.

The Products

Xylan 1514: the most lubricious coating in the series. Specified when stain resistance and non-stick properties are key to the product's function.

Xylan 1514LC: (LC indicates "Low Cure") contains a heat-activated catalyst to allow curing at 400°F (205°C) versus 525°F (275°C) for Xylan 1514.

Xylan 1515 & 1515LC: formulated with slightly less PTFE, these finishes are somewhat harder and glossier than Xylan 1514. Best described as an "easy-clean" enamel rather than a nonstick.

Xylan 1518: far better abrasion resistance and impact resistance than 1514 and 1515 because of the use of special inorganic reinforcing fillers.

Xylan 1585S: (S indicates "Silicone") low-cure coating contains silicone as the nonstick additive. Suitable for either electrostatic or conventional air spray.

XYLAN 1600 SERIES

Maximum Lubrication for Engine Components

General Information

Xylan 1600 Series coatings are primarily used for internal combustion engines (gasoline and diesel), pumps, and compressors. The nonwetting coating also sheds oil, which returns to the sump much faster than with uncoated metal. Some 1600 Series products can be used for flexible substrates. For further information on flexible coatings, ask for Whitford's "Simple guide to superb automotive coatings."

The Products

Xylan 1610: the most lubricious coating in the series was formulated to help new components "break-in", providing extra lubrication for racing engines operating at high RPM, and insuring lubrication of critical surfaces — especially during cold starts.

Xylan 1620: similar to Xylan 1610, but with better abrasion resistance. It is used primarily in the automotive industry.

Xylan 1650: similar to Xylan 1620, ideal in high-pressure situations primarily in the automotive industry.

Xylan 1661: a fluoropolymer coating for electrodeposition masking for the automotive industry; meets GM 6076M.

XYLAN 1700 SERIES

Universal Chemical Resistance with PFA or FEP

General Information

Xylan 1700 Series coatings are formulated from either PFA or FEP. They are recommended for “extreme use” applications which require excellent nonstick or chemical resistance, also useful for coating reprographic rollers.

These topcoats, used with Whitford primers, available in electrically conductive or non-conductive versions, are used primarily for metal and soft copier/printer rollers, “picker fingers” and extruded belt applications.

The Products

Xylan 1700: this high-performance PFA topcoat exhibits excellent release and wear characteristics resulting in exceptionally smooth and non-porous cured films. Thin-film and high-build formulations are available to meet the most demanding OEM and aftermarket end-user performance requirements and specifications.

Xylan 1756: this topcoat consists of virtually pure FEP. Available in clear or pigmented versions, it is used when greater release characteristics are required, i.e. on industrial bakeware. This material may be used with a variety of primers.

Xylan 1781, 1782 and 1783: a premium three-coat electrically conductive system described by processors and end-users alike as the most well-balanced and toughest system available in the world marketplace for metal copier and printer rollers.

This system provides excellent in-service wear and release properties. The application process is extremely “user friendly” resulting in blemish-free coated rollers and less downtime due to “washing”.

XYLAN XLR

Exceptional Mold-Release Coating

General Information

Whitford's newest mold-release coating provides Xtra Long Release, which means more time molding parts and less time recoating molds, especially where sticking is a problem.

This two-coat, waterborne system consists of a unique, super-high release topcoat with a lightly reinforced primer suitable for a variety of substrates including carbon steel. A more heavily reinforced primer is available for applications where a lot of abrasion resistance is required. It is food-safe and can be used at temperatures up to 500°F (260°C).

The Products

17-353 Topcoat: FDA-compliant, waterborne coating for extra long release. Available in emerald green, dark gray, black and black metallic.

17-080 Primer: light reinforcement, waterborne, black primer.

17-180 Primer: medium to heavy reinforcement, waterborne, black primer.

XYLAN 1800 SERIES

Excellent Nonstick and Postformability

General Information

Xylan 1800 Series coatings are remarkably smooth, attractive, industrial coatings with good chemical resistance and excellent nonstick (“re-release”) properties. They are completely color stable to their upper operating temperature limit of 400°F (205°C) and are among the best postformable coatings available. Postforming is the process of shaping parts after the coating has been applied and cured. It is a technique commonly used to stamp, blank, or spin metal parts.

We have food-grade equivalent products available in the 8800 Series. See our “Guide to Whitford Coatings for Consumer Products” for more information.

The Products

Xylan 1810: has a moderate level of PTFE lubricant which provides a slightly harder and glossier film. **Xylan 8810** is the FDA-compliant version.

Xylan 1820: the choice of manufacturers whose fabrication process dictates that metal parts be formed after the application of the surface finish. This formula contains a high percentage of PTFE for excellent long-term performance. High-release (HR) formulations are also available. **Xylan 8820HR** is the FDA-compliant version.

Xylan 1840: our best nonstick matrix coating. Xylan 1840 coating contains a unique additive which has excellent non-wetting properties and outstanding “nonstick/release” — the best of any coating we manufacture. It offers superb mold release across a very wide spectrum of contacting polymers. **Xylan 8840HR** is the FDA-compliant version.

XYLAN 5000 SERIES

Replaces and Outperforms Platings

General Information

Xylan 5000 Series was developed in the early 1980s for the automotive industry. The goal was to protect small parts from corrosion by utilizing the properties of fluoropolymer coatings, but at a fraction of the cost of the spray-applied materials. Our technicians accomplished this by modifying Xylan coatings and mating them with a bulk-application technique which approaches 100% transfer efficiency. This technique is known as centrifugal coating or dip-spinning.

In addition to the original benefits of salt-spray and chemical-resistance, new coating formulae were developed which provide unique properties, e.g., acid-rain protection for roofing fasteners. Available in a broad range of colors, these versatile coatings can increase the performance, life span, and appeal of fasteners or other small parts used in any industry.

The Products

Xylan 5110: a waterborne, low-friction, dip-spin coating for application where a high operating temperature range is required.

Xylan 5164: designed as a decorative enamel, this coating has good UV resistance and is available in many colors.

Xylan 5200: a low-PTFE, unpigmented epoxy similar to Xylan 5250.

Xylan 5214: contains the same ratio of PTFE to coating solids as Xylan 1014. This results in a “dip-spinnable” dry-film lubricant coating.

Xylan 5230: is a chrome-free coating that meets EU’s “End of Life” regulations. It is also RoHS compliant. Specified by automotive industry because of its ability to protect small fasteners from corrosion caused by road salt, acid rain, and other forms of environmental corrosion (see Xylan 5420).

Xylan 5240: similar in concept to Xylan 1052, i.e., it utilizes both PTFE and molybdenum disulfide (MoS_2) to provide lubrication in high-pressure applications.

Xylan 5250: available in many colors, specified by automotive makers and construction industry to protect small fasteners from corrosion caused by road salt, acid rain, and other forms of environmental corrosion.

Xylan 5251: solvent-borne dip-spin fastener coating similar to Xylan 5250. Xylan 5251 Silver is primarily used for automotive fasteners that require great chemical resistance and still have a silver appearance. This material can also be used as a sealer for zinc plating. This combination achieves outstanding corrosion resistance.

Xylan 5270: this resin-bonded, solvent-borne coating has a low level of PTFE to facilitate driving through metal without encouraging backout. It also has good corrosion resistance.

Xylan 5420: protective coating for small fasteners and hardware reduces chipping, increases adhesion and cuts costs 25% over zinc flake coatings. This formula has a VOC content of <3.5 pounds per gallon (<420 grams per liter) and is intended to offer an environmentally acceptable alternative to Xylan 5230 already specified by automotive manufacturers worldwide.

Xylan 5430: the new generation of protective coatings for small fasteners and hardware. Like Xylan 5420 coating, this material has a VOC content of <3.5 pounds per gallon (<420 grams per liter). In addition to providing good corrosion protection, this coating offers improved UV protection, something its predecessors do not.

Xylan 5901: solvent-borne dip-spin fastener coating that is the industry standard for a robust “Bright Silver” with good UV-stability. This product is widely used in the construction industry for sheet-metal building fasteners.

XYLAR INORGANIC SERIES

Protects Metal from Salt Water and
High-Temperature Oxidation

General Information

Xylar coatings have in common an inorganic, ceramic-metallic bonding agent rather than the organic polymer resins used in Xylan coatings. The ceramic-metallic “cornerstone” creates coatings which are much harder than their organic counterparts and have the potential for much higher operating temperatures, depending upon the fillers and additives selected for use in the coating. They provide exceptional thin-film corrosion protection and are often top-coated with one of the lubricated Xylan coatings. Xylar can also be used alone when a lubricated surface is not needed. Processors take note: these coatings have virtually no VOCs.

Xylar coatings are recommended for use in three major application areas: protecting metal from oxidizing due to water in all forms: salt water, ice, steam, even subterranean condensation; protecting metal from high-temperature oxidation up to 1000°F (540°C); providing a sacrificial primer for any conventional air-spray lubricating coating.

The Products

Xylar 1 Basecoat: a blend of ceramic materials in combination with metal fillers (aluminum). When cured, it becomes a ceramic/metallic coating (a “cermet”) which protects metals from high-temperature oxidation and corrosive environments. Two coats of Xylar 1 (under Xylar 101 Sealer, or virtually any Xylan coating) provide excellent long-term salt-spray resistance (1,000 hours minimum, ASTM B-117) and sacrificial anodic protection. When topcoated, this system has survived 3,000+ salt spray hours per ASTM B-117.

Xylar 2 Basecoat: a slightly different chemical composition from Xylar 1, although it remains a “cermet”. This modification produces a coating which is easier and more forgiving to apply.

Xylar 101: utilizes nonmetallic fillers in combination with the basic ceramic materials. Properly applied and cured, Xylar 101 becomes a sealer for the Xylar basecoats described above and enhances the smoothness and salt-spray resistance of the basecoat formulae. The function of Xylar 101 is to inhibit the rate of sacrificial degradation.

Xylar 201: ceramic/PTFE coating which is unusual in that it has low friction and nonstick properties and is harder at 600°F (315°C) than thermoset plastic coatings at 70°F (20°C).

Measured hardness at 600°F (315°C) is 6H to 8H pencil hardness, indicating that Xylar 201 will withstand high-pressure wear applications. Xylar 201 may be used in conjunction with the Xylar basecoats or independently as a single-film coating.

LIQUID HIGH-BUILD COATINGS

General Information

Whitford supplies medium-build coatings of FEP and PFA and high-build coatings of PVDF.

The Products

Dykor 200: Dykor 200 Series system consists of a primer, midcoat, and topcoat and is used to line chemical process and storage vessels. Dykor has been the engineering polymer of choice for severe chemical applications for nearly four decades. Dykor forms a tough, abrasion-resistant barrier which, if employed as recommended, will protect the equipment for many years. Can achieve builds of 25 mils (625 microns).

Dykor 202: this topcoat has no fillers; seals the system.

Dykor 204: this primer contains mica to enhance adhesion of the coating at the substrate/coating interface.

Dykor 205: this intermediate coating contains graphite and is used to “build” the film.

Xylan 80-610: is a high-build PFA dispersion topcoat that offers film builds up to 60 microns, providing better release and longer life. Designed for conventional spray application. Substrate should be primed with Xylan 80-178 or similar Whitford primer. Can be applied over a powder midcoat.

Xylan 80-650: is an aqueous, unpigmented, high-build FEP dispersion. Provides thicker film builds, resulting in better release and longer life. Designed for conventional spray application. Use when Faraday Cage Effect prevents achieving recommended film build in deeper trays. It is also available in an attractive sparkle version that improves visibility during application, making it easier to work with.

POWDER COATINGS

Fluoropolymer

General Information

Powder coating is the process of covering a surface with a powdered plastic (or resin) material. They are designed to protect metal from hostile environments and are virtually unaffected by most chemicals and solvents.

Powder coating materials are comprised of polymeric resins (and often additives and pigments) reduced to small particles with an average diameter of 25 to 90 microns. The main difference is that powder coatings are applied in the form of free-flowing powders, whereas liquid coatings require water or an organic solvent to keep the resin in suspension.

One great advantage of powder is that it can be applied with almost zero environmental impact. The application processes are essentially mechanical and thermal — there are no VOCs to worry about or wash-down solutions to clean up. And, the application methods are relatively inexpensive.

The Products

Xylan 80-510: is a PFA powder mid- or topcoat whose high density facilitates good build properties. Designed for electrostatic spray application. Tougher than FEP. Provides a higher film build. Can be used in photocopier roller or chemical protection markets. Xylan 80-510 must be used with a primer.

Xylan 80-511: a PFA+ powder coating modified to improve film forming, appearance, release and to reduce permeation.

Xylan 80-550: is an FEP powder mid- or topcoat offering thick film builds, resulting in better release and longer life. Ideal for use with high-sugar-content doughs and seeded buns. Designed for electrostatic spray application. Useful for high-release applications where release or economics is more important than high temperature.

Xylan 80-551: an FEP+ powder coating modified to improve film forming, appearance and to reduce permeation.

Xylan 80-610: a high-build PFA multicoat dispersion that can be used over a primer or as a topcoat over powder for improved release and longer life. Reinforced version also available.

Note: FDA-compliant products are available for applications such as industrial bakeware.

POWDER COATINGS

High Performance

General Information

High-performance powder coatings solve many coating problems such as: extreme heat resistance, chemical resistance, low friction, hot hardness, food contact and provide decorative finishes. The numbering system here appears different as these products were acquired from AkzoNobel.

The Products

Xylan 42P, 43P, 44P, 45P: are decorative high-heat functional powder coatings designed to provide a highly decorative finish to pieces exposed up to 575°F (300°C). Note: Colors do not yellow after exposure to high temperatures.

Xylan 93P, 94P: are silicone resin-based powder coatings that withstand high-heat service-temperature exposure up to 1000°F (540°C). Designed for excellent thermal-shock resistance as well as good corrosion resistance.

Xylan 26P: are FDA-compliant powder coatings based on high-heat-resistant resins and extremely tough polymers. These products provide excellent hot hardness as well as chemical inertness and resistance to abrasion — even at elevated temperatures.

Xylan 13P: these products have an extremely low coefficient of friction (CoF), forming a dry coating that creates a moisture barrier as it reduces friction, binding and wear. They also have easy-clean properties.

Whitford offers a separate brochure on these products. Ask your representative for a copy.

PRIMERS

XYLAN LIQUID PRIMERS FOR XYLAN LIQUID COATINGS

Xylan 4016: a solvent-borne primer that provides adhesion to silicone-rubber substrates. Formulated for use with the Resilon 2000 Series.

Xylan 4018: a solvent-borne primer that is used to provide adhesion for Xylan 1700 PFA and 1756 FEP liquid dispersions.

Xylan 4020: a waterborne primer for rubber substrates intended to be used with Resilon 2000 Series.

Xylan 4060: a waterborne primer used to provide adhesion for Xylan 1700 PFA and 1756 FEP liquid dispersions.

Xylan 4070/P501: is a solvent-borne primer that contains phosphoric corrosion inhibitors and can be used when phosphate pretreatments are not available. It is formulated to be used with the Xylan 1400 and 5000 Series. It can be applied by either spray or dip-spin method.

Xylan 4080: is a solvent-borne primer specifically developed for coil coating. It should be used with the Xylan 1800 and 8800 Series.

Xylan 4090/P-92: a solvent-borne primer and barrier coating, formulated to provide better corrosion resistance for the Xylan 1000 and 1600 Series.

Xylan 4090/Brown: a solvent-borne primer, similar to 4090/P-92 but with added pigment for visibility during application or inspection.

XYLAN 5611: is a solvent-borne, resin-bonded, zinc-rich sacrificial primer. It is useful when phosphate or zinc plating is not available. It is formulated to be used with the Xylan 1400 and 5000 Series. It can be applied by either spray or dip-spin method.

XYLAN LIQUID PRIMERS FOR POWDER COATINGS

XYLAN 80-178: is a solvent-borne, high-build primer for use with Xylan 80-550 FEP and 80-510 PFA powders. It is available in either Black Metallic or Gray Brown.

XYLAN 80-087: is a waterborne primer formulated for use with Xylan 80-550 FEP and 80-510 PFA powder coatings. It is available in Brown, Black, Fern Green and Gray Brown.

Xylan 4018: a solvent-borne primer is used to provide adhesion for Xylan 80-550 FEP and 80-510 PFA powder. It is available as a high-build with metallics.

75-4018-1: a reinforced basecoat that has a high level of reinforcement that enhances the life of a fuser roller.

75-1044-1: a basecoat designed to adhere to smooth, stainless-steel fusing belts (no grit-blasting required). Can be topcoated with either 2 or 3 layers. Will give excellent service life.

75-4001: a lightly reinforced, non-conductive basecoat designed to be applied over a grit blast or alkali-etched aluminum substrate.

FLEXIBLE FINISHES

General Information

There are remarkably few relevant automotive problems that coatings by Whitford cannot solve. The descriptions that follow should help you choose the range of products most suitable for your application. Then discuss the application with your Whitford Technical representative who can assist you with your final selection.

The Products

Xylan 1225: best Whitford coating for chemical resistance on rubber substrates. Ideal for O-rings, gaskets and rubber components.

Resilon 2020: single component. Has good flexibility, freeze-release, noise suppression and anti-squeak characteristics. VOC-compliant, conventional spray-applied coating. It requires a primer, corona or flame pretreatment. Ideal for temperature-sensitive substrates and automotive EDPM extrusions. *Note: VOC compliance applies to USA only.*

Resilon 2120: a smooth high-abrasion-resistant coating for rubber substrates with good weathering and freeze-release characteristics. It requires a primer, corona or flame pretreatment. *Note: VOC compliance applies to USA only.*

Resilon 2121: two-pack (A = resin & B = catalyst). Has best abrasion resistance and low-friction properties. VOC-compliant coating system that can be applied by conventional spray techniques. It requires Xylan 4016 primer or a corona or flame pretreatment. *Note: VOC compliance applies to USA only.*

Resilon 2251: simple fitting aid that will give controlled friction values to rubber substrates.

Resilon 2420: rapid-cure coating designed for temperature-sensitive rubber substrates or where cure time is limited. Has good flexibility, freeze release, noise suppression and anti-squeak characteristics.

Xylan 4016: solvent-based, adhesion-promoting surface pretreatment for temperature-sensitive substrates. Designed for conventional spray application and dries at ambient temperature.

Resilon 4020: water-based, adhesion-promoting surface pretreatment for temperature-sensitive substrates. Designed for conventional spray application.

OTHER COATINGS

Dykor 631: PVDF coating is specified to protect metal from hostile environments because of its unique properties: unaffected by most chemicals and solvents, abrasion resistance, and mechanical strength. Less well known properties of Dykor are its high thermal stability (no thermal degradation after five years at 300°F/150°C), ability to self-extinguish (will not burn in air), high dielectric strength (950 volts per mil), and excellent resistance to weathering, ultraviolet (UV) rays, and nuclear radiation.

Dykor 631 can be used as a single-film coating, or in lieu of Dykor 202 as the topcoat for the Dykor 200 Series system. Dykor 631 is similar to Dykor 202, but pigmented to satisfy unique color requirements. As Dykor 631 topcoats can be formulated in virtually any color, its use is no longer restricted solely to CPI applications and it may be used in a variety of applications requiring high-performance chemical resistance. Useful in medical applications. This product is autoclavable.

Ultralon OC-625: is a waterborne, acid-catalyzed, PTFE coating. OC-625 is unique in that the acid provides adhesion allowing a high ratio of PTFE. This coating achieves a smooth nonstick film at low film thickness, on unblasted surfaces. This product is used for medical guide wires and other medical devices.

Xylan 8500LC: (LC indicates “Low Cure”) is a solvent-borne dip-spin fastener coating. Xylan 8500LC is the industry standard for a robust white fastener coating with good UV stability. This product is widely used in the construction industry for outdoor screen enclosures and hurricane shutters.

Xylan 8820HR: (HR indicates “High Release”) is the FDA-compliant version of Xylan 1820HR.

Xylan 7050/7252/7353: special internally reinforced abrasion-resistant three-coat PTFE system for high-performance mold release. Has excellent abrasion-resistant properties.

OTHER COATINGS

Useful for Reprographics

General Information

Reprography is the reproduction of graphics through mechanical or electrical means, such as photography or xerography. If you are in the business of designing this kind of equipment, then you need fuser rollers that meet the requirements of today's complex fusing technology. Changes in toner technology, durability, warm-up time and power consumption all factor into designing the best fuser roller with the optimum coating. For more information, contact your representative at Whitford.

The Products

I-10008-3: a solvent-based high-temperature-resistant (1000°F/540°C), matte-black coating which can be air dried. It is excellent for use in the interior of fuser rolls to absorb the IRE (Infrared Energy) from the Halogen lamp and transfer the heat to the surface of the fuser roll. It can also be used for mufflers.

90-2002B-2: a solvent-based high-temperature-resistant (1000°F/540°C), matte-black muffler coating. It can be applied to aluminized steel and cold-rolled steel substrates without a primer. Substrate must be degreased. It is also used on the interior of aluminum fuser rolls to absorb the IRE from a Halogen lamp which heats the roller to fuse the ink.

75-4001/75-4002-1/75-4003-1: a three-coat water-based non-conductive system developed for copier rolls. Both the basecoat and midcoat are reinforced. The topcoat is very smooth and minimizes polishing of the roll surface. It also provides excellent release.

I-10408B: a water-based one-coat system designed for the paper transfer rolls in a copy machine.

The Whitford Ethos

1. We believe in making superior products.

Our products must be better than those of the competition in some way: properties, price or both. This makes it easier for the customer to choose Whitford — and harder for him to choose a competitor.

2. We believe in serving our customers better.

While we sell products, we are in the business of people: people whose jobs may depend on the support they receive from their suppliers. In times of diminishing product differences, service can set us apart. We must place our customers' interests above our own. It is difficult to fire someone who serves you well.

3. We believe in leading the way.

We must commit a higher percentage of sales, interest and talent to research and development than our competitors do. We must blaze new trails.

4. We believe in high personal ethics.

No lying, cheating or stealing. We despise politics, the pastime of small people. We embrace equal opportunity: everyone must have the same right to succeed.

5. We believe in being happy.

We spend a lot of time at our jobs. It should be happy time. Life is short. We agree with the Scottish proverb: "Be happy w'er leevin, for y'er a lang time deid."

6. We believe in divine discontent.

Self-satisfaction is the first step toward failure. Remember: "Good enough is *not* good enough".

Makers of the largest, most complete line
of fluoropolymer coatings in the world
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