From coatings for use throughout reprographics...

To coatings for the offshore oil industry...

From coatings for complicated small parts...

To coatings for many different automotive parts...

How Whitford coatings add value to myriad industrial products

From better release to improved corrosion resistance to greater flexibility to longer wear life, Whitford coatings offer a wide range of important benefits

Whitford

Makers of the world's largest, most complete line of fluoropolymer coatings

Whitford formulates and manufactures high-performance fluoropolymer coatings (also known as "nonstick" coatings) for countless applications, including food contact, high-temperature use, decorative, industrial, aerospace, automotive, chemical processing, textiles, reprographics, etc.

Whitford's worldwide headquarters, located in Elverson, Pennsylvania, in the United States.

Whitford manufactures in 7 countries, has offices in 7 more, agents in 25 and sells in more than 50.

Headquarters for Europe are located in the north of England, in Cheshire.

We manufacture the largest, most complete line of fluoropolymer coatings in the world. But size is not the only thing that distinguishes Whitford from its competitors.

The secret weapon

Whitford spends a higher percentage of sales on research and development than any of our competitors. We run training programs for our people and our customers around the world. Whitford frequently formulates special coatings to solve an individual customer's specific problems. And we provide unsurpassed technical support for our products worldwide.

Headquarters for Asia are located in Singapore, where many of the Asian training programs are held.

Whitford continues to invest significant funds in R&D, now operating full laboratories in the US, England, Italy, Brazil, Singapore and China.

The laboratories are adjacent to manufacturing and include the following subdivisions:

1. Development: new products
2. Technical service: product modification and customer support
3. Applications: production-line simulation and process improvement
4. Powder coatings: product development and small-scale production
5. Analytical: quality control, testing and detailed analysis
6. Environmental: both weathering and corrosion testing.

Scope of equipment/testing

Whitford uses the following in its laboratories around the world:

- Infrared microscopy including FTIR micro scope
- Atomic Absorption spectroscopy
- State-of-the-art noise analysis
- SEM/EDS
- Automated colour matchers
- Thermal analysis (DSC, TGA/IR, GCP)
- Working relationships with 7 universities
- Coefficient of friction measurement (CoF)
- Extruders
- Kesternich and Salt-Spray cabinets
- Accelerated testers and Weatherometer
- Melt Indexers
- Continuous mechanical substrate etchers
- Laser particle-size analyzers
- Karl Fischer Titrimeters
- Reciprocating Abrasion testers
- Mechanical Scratch testers (a Whitford development)
- Knife and Spatula Scratch tests (also Whitford developments)
- Tensile Strength testers
- Surface-Tension measurement technology
- Digital recording of results with central computer files.

Application technology

- Spray, Dip/spin
- Roller coaters
- Curtain coaters
- UV and IR technology

What is a high-performance coating?

High-performance fluoropolymer coatings are low-friction, dry-lubricant materials that achieve remarkable synergy by combining the capabilities of two types of engineering plastics. Fluoropolymers, with the lowest known 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.

Xylan® industrial products

From the very first, Whitford developed matrix coatings for industrial applications. As these applications have grown and become more focused, Xylan coatings have been adjusted to met the specific demands of each. As a result, Xylan became the largest, most complete line of fluoropolymer coatings in the world.

Whitford's largest line of fluoropolymer products.

Among the many properties that these coatings offer are:

1. Low friction: a CoF as low as 0.02
2. Outstanding release
3. Wear/abrasion resistance: even under extreme pressures.
4. Corrosion and chemical resistance: in most environments
5. Weather resistance: against salt water, road chemicals, acid rain
6. Wide operating temperature range: from -420˚F/-250˚C to +550˚F/+285˚C
7. Flexible curing schedule: ambient to 825˚F/440˚C
8. UV stability: some formulations have superb resistance to ultraviolet light
9. Pliability: bending freely and frequently without breaking
10. Machinability: apply multiple coats (most formulations) and mill to specification
11. Excellent adhesion: to most metals, plastics, ceramics, wood, even to itself (some formulations)
12. Electrically conductive/static dissipative systems
13. Wide range of colours: to colour-code your products
14. Available in 1-, 2- and 3-coat systems.

With Xylan, there is no "one size fits all". Each variation is altered to provide the maximum performance for the application at hand. That's why we say, "If we don't have a coating that will solve your problem, we'll design one that will."

Automotive products

Many of the world's automotive manufacturers specify coatings made by Whitford.

Whitford makes the world's largest line of fluoropolymer coatings for automotive components. These coatings solve problems of abrasion, corrosion, noise (itch and squeak), friction, release, sealing, weathering and decoration.

Automotive manufacturers who have specified Whitford coatings include Arvin Meritor, Audi, BMW, Citroën, Chrysler, Ford, General Motors, Honda, Jaguar, Karmann, LandRover, Mercedes-Benz, Nissan, Peugeot, Porsche, Rover, SAAB, SEAT, Suzuki, Telco, Toyota, Volkswagen, Webasto.

There are remarkably few automotive problems that Whitford coatings cannot solve.

Flexible Finishes

Whitford recently developed a new line of specialty automotive coatings that offers a complete range of benefits to solve many problems on flexible substrates.

Some are sold under the Xylan name (solvent-based) and others under the Resilon® name (water-based).

The many benefits include low-friction, freeze-release, excellent resistance to abrasion, elimination of itch and squeak, reduced insertion force. These coatings offer improved resistance to weathering and chemicals, plus aesthetics (clear coatings).

They are easily applied to a variety of substrates, including EPDM, NBR, PVC, TPV, acrylics, ABS and polyester, sometimes in combination with Whitford-provided or Whitford-approved primer systems.

They are used for glass runs, door, trunk and hood seals, O-rings, diaphragms as well as for decorative effects.

Dip/Spin Applications

Xylan coatings are easily applied by many methods, including dip/spin. They provide superb resistance to abrasion, corrosion, temperature, chemicals, the elements. They contain no heavy metals, offer precise, uniform torque-tension control, less head fill, and come in many colours.

Off-Shore Oil Industry

Xylan coatings offer many benefits for offshore service. These include resistance to corrosion and chemical attack, superb subsea visibility, lower maintenance costs and less downtime.

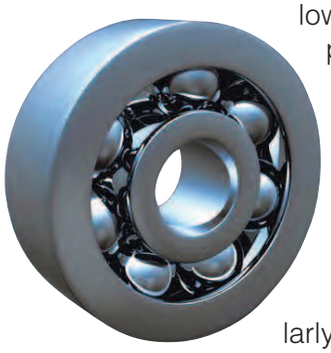
Whitford is world leader in the off-shore oil industry in terms of thin-film coatings.

Xylan coatings have been the first choice of many engineers in the offshore industry for more than 30 years.

You'll find Xylan hard at work above and below the sea in the Hibernian Peninsula, Gulf of Mexico, Arabian Sea, South China Sea, North Sea, West Africa's deepwater frontier — wherever the offshore industry faces severe conditions that demand the finest performance from protective coatings.

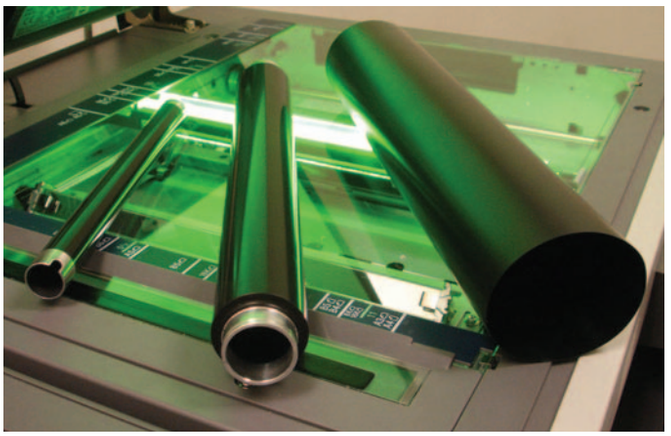
Xylan for Bearings

Xylan coatings for bearings are ideal as the primary lubricant where fluids cannot be used or as backup lubricant where the primary (fluid) lubricant could fail. Automotive uses are increasing where cleanliness is important. They are wear-resistant, low-friction materials that improve the life of bearings and wear surfaces. By reducing metal-to-metal contact at interface surfaces, the coatings minimize the points of adhesive wear and heat buildup.



These coatings are particularly important when parts are operating on the outer limits of their fluid lubrication, the so-called "boundary" lubrication phenomenon, or during break-in periods. Whitford will help you determine which coatings are best suited to your bearing applications and how you should apply them.

Reprographics



Whitford coatings are showing up in rollers of many types around the world.

Whitford has developed specialty coatings for the demanding reprographic industry.

These coatings offer many benefits for fuser rollers in copiers and laser printers. These include superior toner release, dissipating static electricity, and extending service life.

Moulds

Whitford offers a wide range of Xylan,® Xylar® and Dykor® coatings for all types of moulds and materials, designed to simplify and make more efficient the manufacture of many different kinds of products.

Typical materials used in moulds coated with Xylan, Xylar and Dykor include PET, carbon fibre, glass, rubber, polyurethane. Typical mould applications include tyres, foods, belts, auto headliners, shoes, cutting disks, packaging, etc.

Whitford coatings have superb release, outstanding abrasion resistance, resistance to chemicals, etc.

Garden Tools

Whitford's Xylan coatings offer many benefits for all types of garden tools. These include making cutting easier, keeping blades sharper longer, resisting corrosion, reducing "snagging", extending service life and improving eye appeal at point of sale.

Xylan coatings are perfect for everything from lopper blades and pruners to hand trowels and saw blades.

Waterworks

Whitford's coatings offer a long list of advan-

tages, especially compared to stainless steel, whose price continues to set new records.

They include resistance to rust/corrosion, to galvanic corrosion, lower cost, controlled torque, easy removal of nuts, wide range of operating temperatures, UV stability, resistance to hot soil, ease of application, many colours for colour coding, and compliance (in many cases) with the FDA.

Industrial Bakeware

Whitford offers a "Cafeteria Plan" of Xylan coatings for the industrial bakeware industry. You can pick and choose, designing and combining to suit whatever your needs may be — from liquid primers to powder midcoats to powder and dispersion topcoats.

These include our newest PFA+ systems with better, longer-lasting release and improved adhesion (along with FDA food compliance).

All of Whitford's Xylan coatings can be made available in reinforced formulations for additional resistance to abrasion.

Conventional systems provide good release with ease of application at low costs. There are also high-build systems that can be applied up to 80 microns, perfect for baking trays, bread pans and bread straps. Special coatings are available for seeded products, plus those with a high sugar content, including sweet cakes, pies, buns and biscuits.

Some of our topcoat dispersions provide a smoother, glossier, high-build (in deep shapes) at a lower cost than powders.

Applying Whitford coatings

Most Whitford coatings are designed for ease of application and, depending upon the formulation, can be applied by conventional spray, roller, curtain, HVLP, electrostatic, dip/spin, and dip/drain.

Cure temperatures offer some flexibility (for example: if cast aluminum is being coated).

What's new?

Whitford R&D is constantly developing new products and improving existing ones. The endless search is part of our basic business philosophy, which we put into writing shortly after our founding in 1969: "We're not in the business of selling coatings. We're in the business of solving problems for our customers. Coatings and related technology are only the means by which we solve their problems."

For more information about any of our products, or to find out what is new, please contact your Whitford representative or Whitford directly at sales@whitfordww.com.

Whitford has a wealth of printed information on a wide variety of subjects. One of the easiest ways to access this is to go to the website home page (whitfordww.com), click on "Further info", then click on "Download literature".

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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.

How to contact Whitford

Whitford manufactures in 7 countries, has employees in 7 more and agents in an additional 25. For more information, please contact your Whitford representative or the nearest Whitford office (see our website: whitfordww.com) or sales@whitfordww.com.

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