

BE QUIET!

Let Whitford's new "Low-Noise Technology" go to work for you...

Noise (and what to do about it) are the hot topics among auto manufacturers these days. And now, thanks to a breakthrough, there is some very good news.

“Itch and squeak” is the noise generated by micromovement between mating surfaces such as the car door and the door sealing system. And this is precisely where Whitford has put its emphasis.

Tightening the screws on tests

Until recently, there was a GM standard of 45 dBA as a maximum for noise generation on coated sealing systems. Whitford met this standard with its new product, Xylan® 2022, by developing a brand new technology. Then GM moved to a new and more demanding standard: a maximum of 40 dBA.

In ongoing developmental programs based on extensive Analysis of Variances (ANOVA) studies and highly specific Design of Experiments (DOEs) employing the latest in computer software, Whitford has been able to dig deeply into the mysteries of noise generation resulting from stick/slip. As a consequence, Whitford has been able to correlate its results with actual on-vehicle noise generation.

Whitford set itself a target of below 40 dBA, in anticipation of lower limits being introduced by GM. Whitford’s understanding of the phenomenon of itch and squeak has made it possible to achieve coatings in the region of 37 dBA — a good thing, since the 40 dBA standard was likely to be reduced again, to somewhere in the area of ambient noise in a moving vehicle.

Meet “LNT”

Further, Whitford has been able to incorporate this new technology, referred to as “Low-Noise Technology” (LNT), across its wide range of weatherstrip and glass-run coatings.

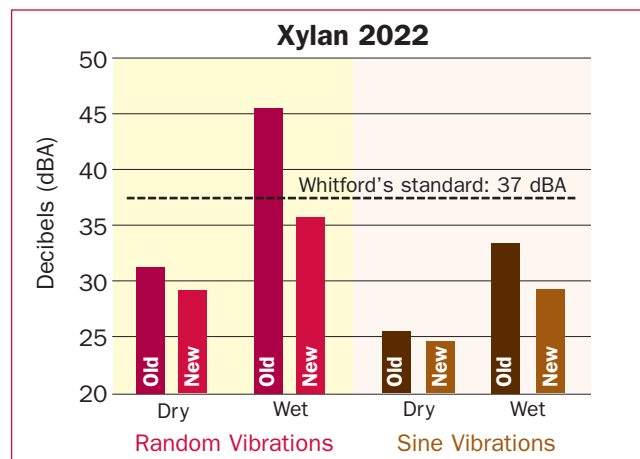
Conventional wisdom led to the use of particulate technology (hard lumps protruding through the surface of the conventional coatings) to reduce contact with the mating surface area and, as a consequence, reduce stick/slip. But there is a problem inherent in so-called “particulate” technology: The very roughness of the surface has a propensity to wear the internal mating surface of the vehicle door.

This has been exacerbated by the cost-reduction programs of manufacturers, who have removed the tough, clear top coat from such surfaces, leaving the relatively soft (and easily scratched) colour coats exposed to the abrasive

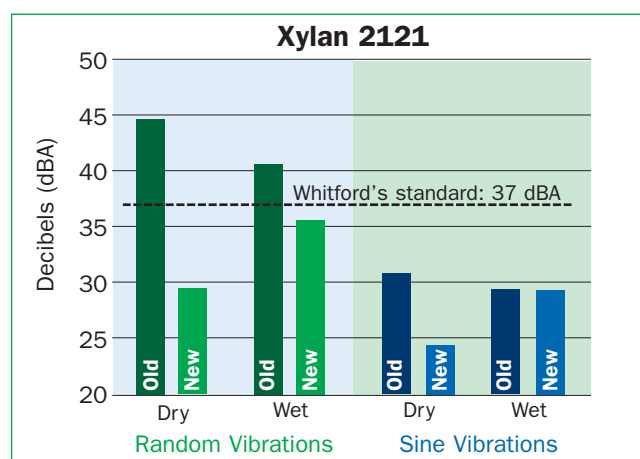
wear of the particulates. Whitford turned this technology on its head by creating coatings with smooth surfaces. Of course, these smooth coatings meet the demanding standards of all aspects of the performance specifications — but the surface is quiet and non-abrasive.

What tests reveal

The first two graphs (below) reflect tests performed by an independent laboratory to determine the amount of noise reduction achieved by the newest versions of Xylan 2022 and Xylan 2121 against the previous versions. Additional tests were run in two of Whitford’s laboratories to determine the ratio of static to kinetic friction between pieces of EPDM coated with Xylan 2022 and Xylan 2121 as compared with EPDM coated with a typical urethane material.



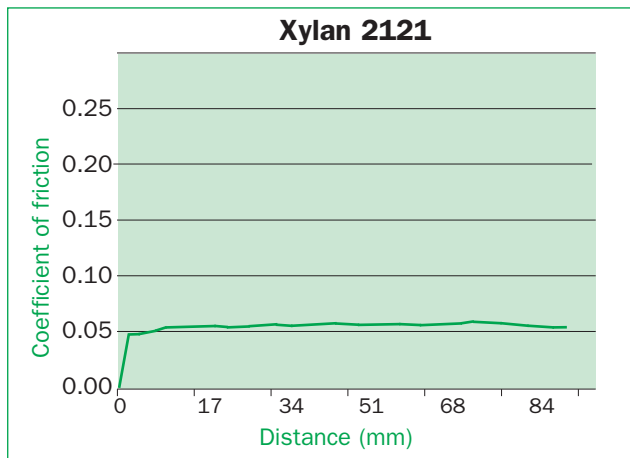
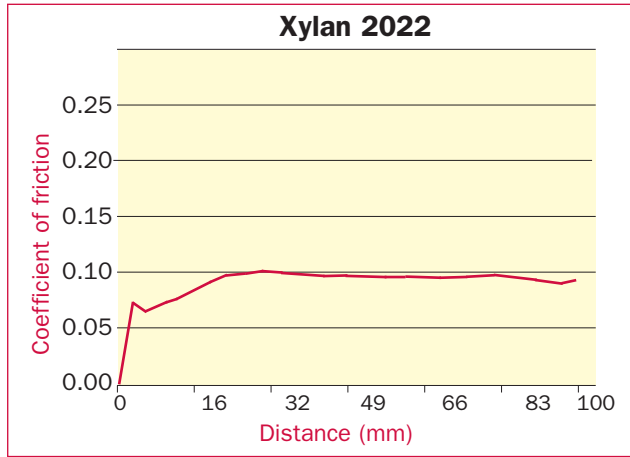
A comparison between the older and newer versions of Xylan 2022 demonstrate the noise reduction achieved (both wet and dry tests in random and sine vibrations are below Whitford’s standard of 37 dBA).



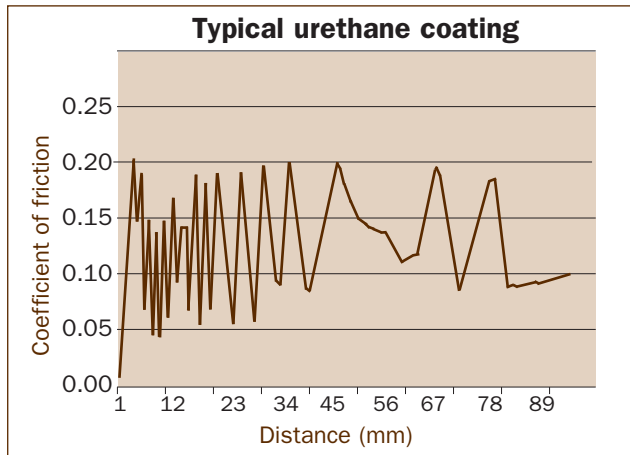
A comparison between the older and newer versions of Xylan 2121 show similar improvements in noise reduction, all well below 37 dBA.

These graphs show an initial, large spike in friction that represents the energy required to overcome inertia and set the coated pieces in motion. Once movement is achieved, the energy required to maintain it is minimized, represented

by the essentially flat lines, which also represent the continuous movement of the coated pieces.



The following chart shows the same kind of measurement, this time on a typical urethane.

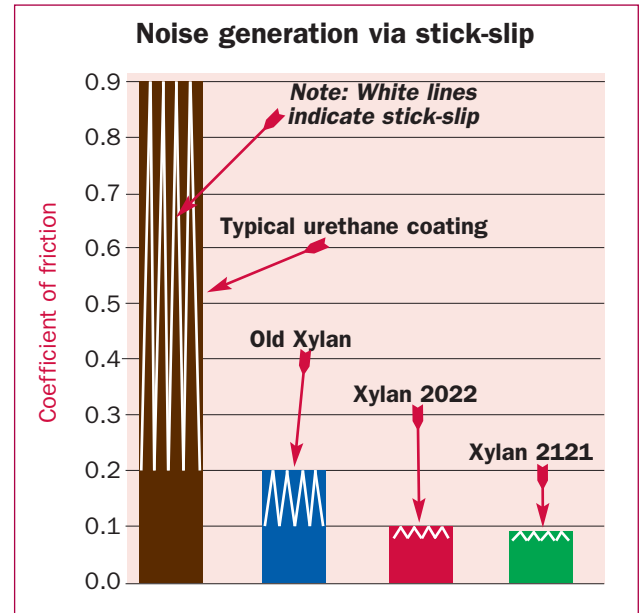


What about “stick-slip”?

To determine the difference between Whitford’s coatings and typical urethane coatings, the following test (ASTM D1984) was conducted.

Virtually the same amount of energy is required to overcome inertia and achieve movement. But, as the typical urethane coating is dragged over standard painted steel, friction suddenly stops the movement and additional energy is required to restore movement (repre-

sented by the additional spikes). Each spike represents a “stick” in the “stick-slip” process.



Other Whitford coatings now incorporate new LNT

LNT has been engineered into many other Whitford flexible finishes, bringing the same benefits of reduced noise to the entire range. Among them are:

Weatherstrip

2020: Whitford’s one-pack, waterborne weatherstrip coating, engineered to give excellent noise suppression, low friction, freeze-release, outstanding abrasion resistance and weathering characteristics. Little or no pretreatment is required on dense substrates. Suitable for off-line and on-line application. Easy to apply.

2022: Similar to 2020 but in a robust two-component formulation.

2320: Whitford’s most widely used weatherstrip coating, offering low friction, excellent freeze-release, good noise suppression and excellent abrasion resistance. 2320 products are two-component, solvent-borne coatings that are easy to apply and have a proven track record for over 10 years.

2525: Whitford’s unique UV-cure coatings perform similarly to Xylan 2020 and 2022 but are UV-cured instead of thermally cured. This enables a significant increase in line speed, major waste reductions, lower energy costs and huge savings in space (up to 30 percent).

Glass-Run

2121: A waterborne, two-component version of 2321 offering low friction and excellent abra-

sion resistance to meet the most arduous performance requirements for glass-run seals. It also withstands corner-moulding operations.

2321: A well-established glass-run coating, offering low friction and excellent abrasion resistance. 2321 products are two-component, solvent-borne coatings that are particularly easy to apply.

Appearance

2222: A decorative finish for rubber, leather, vinyl and other synthetics. It comes in many colours, creating opportunity for eye-catching applications, such as iridescent seats. In addition to their appearance, 2222 prod-

ucts offer low friction and outstanding resistance to weather and to wear. These are single-component, waterborne coatings.

2322: Whitford's most widely used decorative finish for rubber, leather, vinyl and other synthetics, available in a wide range of attractive colours. In addition to their appearance properties, 2322 products offer low friction, excellent abrasion resistance and excellent freeze-release properties. These are two-component, solvent-borne coatings that are particularly easy to apply.

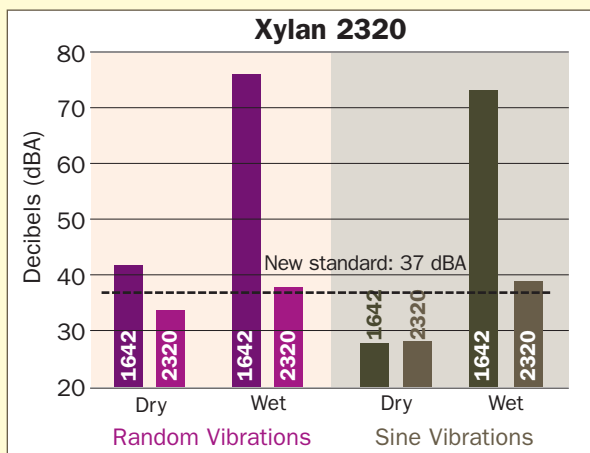
For more information, as well as a copy of the test results, contact your Whitford representative or the Whitford location nearest you (see the back cover).

Xylan 1642 to Xylan 2320: A quiet revolution

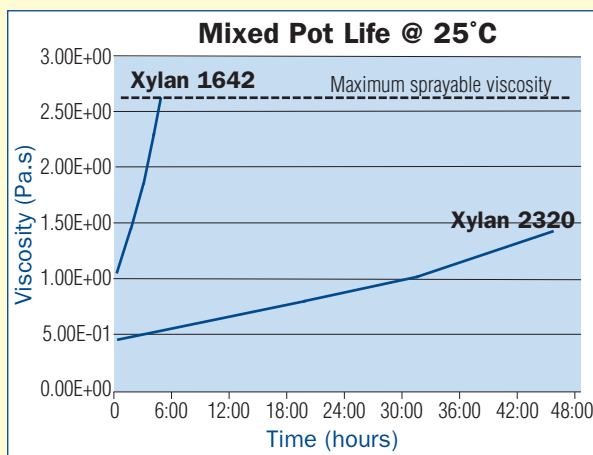
Xylan 1642 is one of Whitford's most popular products, used to coat weather-strip and glass runs for low friction, wear resistance, etc. To improve performance beyond what has been highly successful, 1642 was subjected to the new LNT technology (with all its excellent properties, it is a noise generator under wet conditions). The results are outstanding.

Look at the astounding change in pot life (see chart).

The revolution in the transition from Xylan 1642 to Xylan 2320 doesn't stop there. Other improvements in the new version of this product are equally impressive (see below):



Characteristic	1642	2320	%
Gloss	Matte	Low	
Crosshatch	Pass	Pass	
Toluene double rub	50	200+	400
CoF			
Static	0.21	0.10	<50
Dynamic	0.21	0.03	<80
Crock Test			
Dry @ 500 cycles	3	5	>60
Wet @ 500 cycles	3-4	5	>40
Soapy water @ 60	3-4	5	>40
Cataplasm Test	Pass	Pass	
Water Immersion (96 hrs @ 80°C)	Pass	Pass	
Appearance	Pass	Pass	
Cross hatch	Pass	Pass	
Pot life (mixed)	4 hrs	48 hrs	1200



Of course, Xylan 1642 remains available to those who wish to use it. Nevertheless, based on all the significant improvements made, Whitford recommends that new and old users alike should test and evaluate Xylan 2320 for both ongoing and new applications. It is a genuinely superior product.

Xylan flexible finishes at work

Interiors sparkle with bright colours and textures of Xylan 2222 or 2322

Noise is dampened during operation with Xylan 2121 or 2321

Chemicals, auto fluids are no problem with Xylan 2222 or 2322

Micromovement "itch and squeak" are eliminated by Xylan 2020, 2022, or 2320

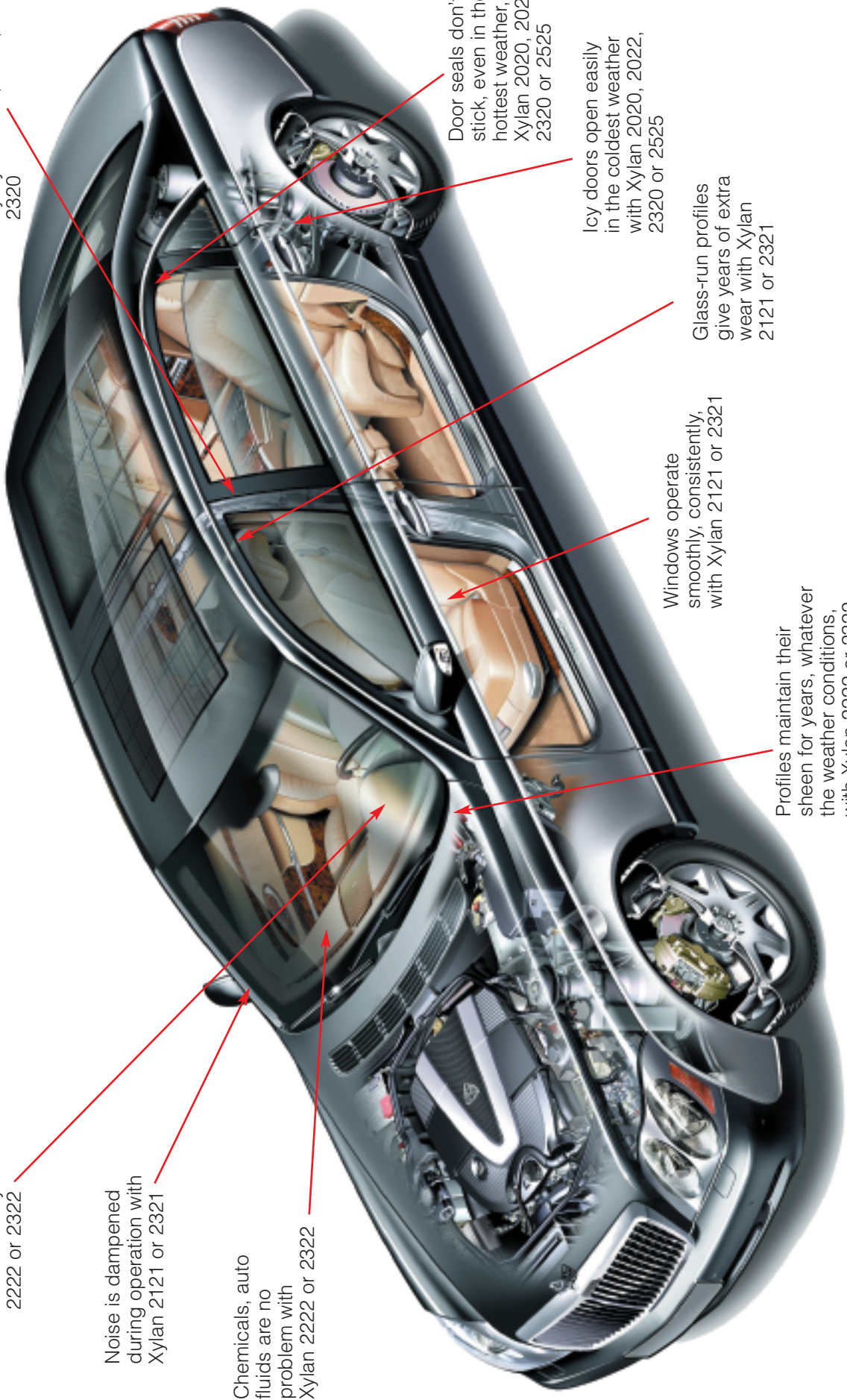
Door seals don't stick, even in the hottest weather, with Xylan 2020, 2022, 2320 or 2525

Icy doors open easily in the coldest weather with Xylan 2020, 2022, 2320 or 2525

Windows operate smoothly, consistently with Xylan 2121 or 2321

Glass-run profiles give years of extra wear with Xylan 2121 or 2321

Profiles maintain their sheen for years, whatever the weather conditions, with Xylan 2222 or 2322



Shhhh...

Whitford's new "Low-Noise Technology" could be working for you...

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