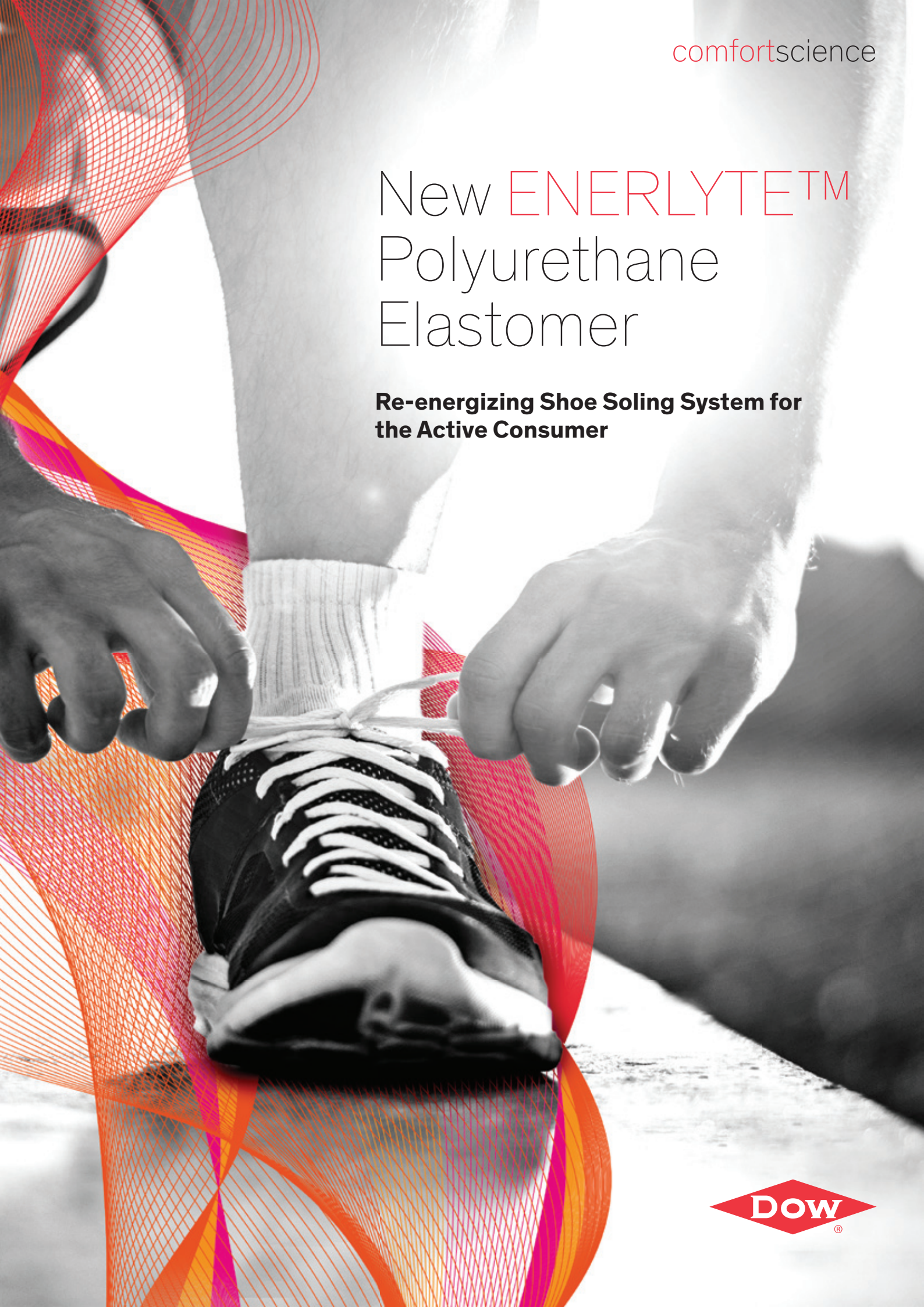
comfortscience

New ENERLYTE™ Polyurethane Elastomer

Re-energizing Shoe Soling System for the Active Consumer



DOW®

comfortscience

THE SCIENCE OF COMFORT EXPLAINED

ComfortScience is the application of science to create materials which deliver the most comfortable experience possible.

Consumers are always looking for a more comfortable experience – because comfort is fundamental to achieving a good quality of life and a sense of wellbeing.

At Dow, we're committed to helping people achieve their ideal levels of comfort. We do this by combining our knowledge of material science with an understanding of how human beings think, feel, sense and behave. We call this **ComfortScience**.

HOW DO WE DELIVER IT?

By drawing on our scientific expertise and technical knowhow, we produce a range of high-quality materials that meet different needs.

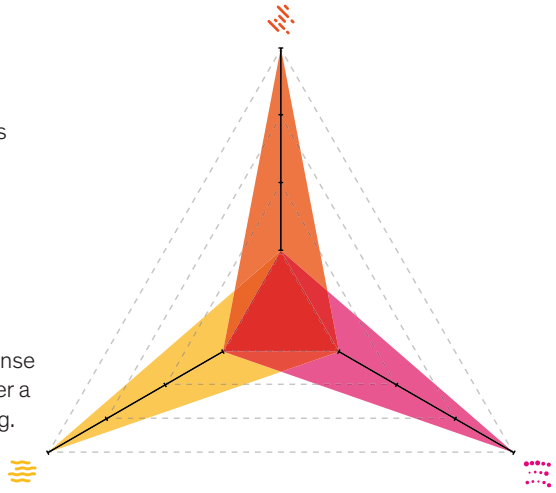
At Dow, we've identified three dimensions of comfort to help us do this: **Ergonomics**, **Microclimate** and **Sensation**. By configuring these qualities differently, we can respond to different needs and tailor solutions to deliver the most comfortable experience possible.

EXPLORING THE THREE DIMENSIONS OF COMFORT

Ergonomics
Optimising the relationship between the weight, shape and size of the body and the material to create a supportive, high-performing system.

Microclimate
Maintaining comfortable levels of temperature and humidity in the microclimate that exists between materials and the human body.

Sensation
Understanding a material's textural qualities and its response to light touch, in order to deliver a tangible sensation of wellbeing.



Addressing the Needs of Active Consumers

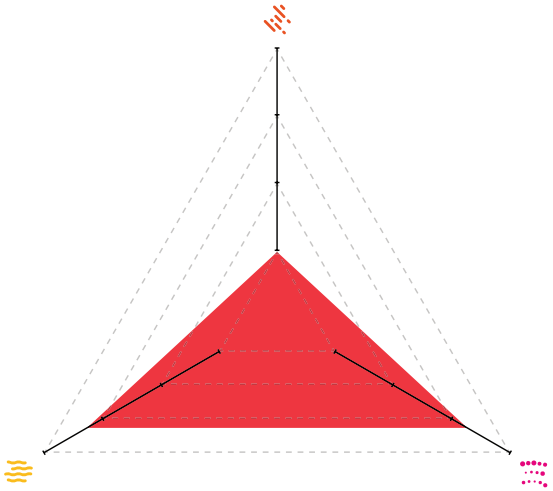
Now, more than ever, consumers are increasingly becoming more **active and fitness conscious**, which has given rise to the athleisure movement.

Active consumers are gravitating towards shoes that are both athletic and casual for their day to day activities, or in other words, footwear that fits for every occasion. With this comes their need for shoes that are lightweight, comfortable and durable, all while looking great. As the prominence of casual sports footwear increases, so does the need for reliable materials and technologies that go the distance.

Striking the right balance between ergonomics and sensation is essential to deliver on both comfort and performance for the active consumer. Dow's latest footwear solution, ENERLYTE™ Polyurethane Elastomer, has been designed to maintain that balance targeting the increasing trend in athleisure footwear. ENERLYTE™ elastomers have a particular composition and morphology specifically developed to enhance the performance of full or midsoles in casual, trekking and athletic footwear.

BENEFITS OF ENERLYTE™

ENERLYTE™ Polyurethane Elastomer provides a broad range of benefits to consumers, brand owners and converters (manufacturers/molders).



DIMENSIONS
ERGONOMICS

SENSATION

PARAMETERS

WEIGHT

- Light Weight soles reducing the fatigue in walking over longer distances

DURABILITY

- High hydrolysis and abrasion resistance
- Good compression set prevents formation of wrinkles thereby maintaining the aesthetics
- Very good flex fatigue and tensile strength

REBOUND

- High 'energy return'
- Enables good performance dynamic between high rebound and cushioning

TOUCH

- 'Rubbery' natural feel
- Soft to medium hardness in soles, ensuring a comfortable footwear experience
- Retains soft and bouncy feel even in cold conditions (-20°C)

ADDITIONAL BENEFITS FOR ENERLYTE™ ELASTOMERS INCLUDE:

- Environment friendly solution using water-blown PU
- Production using conventional PU machinery (pouring/casting, direct injection)
- ENERLYTE™ outperforms EVA and standard PU foams when it comes to ball rebound and energy return, delivering high sole resilience and elasticity.

Performance Comparison of ENERLYTE™

	VS STANDARD EVA	VS E-TPU	VS STANDARD PU
Molded density	–	✖	✔
Compression set	✔	–	–
Ball rebound/energy return	✔	–	✔
Abrasion resistance	✔		–
Dimensional stability	✔	✔	–
Processing	✔	✔	–
Productivity	✔	✔	–

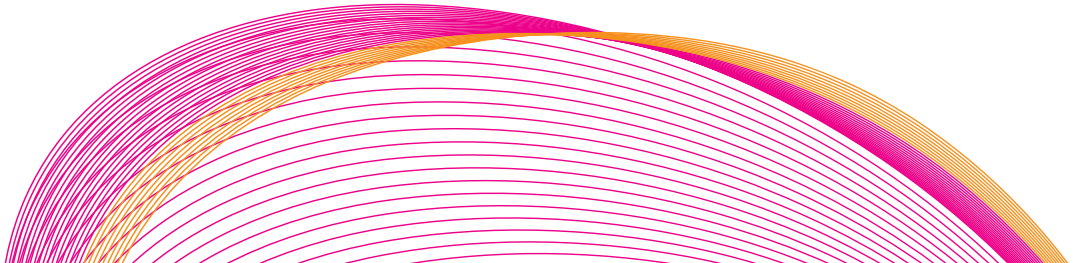
✔ Advantage – Similar ✖ Disadvantage

TYPICAL TECHNICAL PROPERTIES

When using ENERLYTE™ for midsoles and unit soles, manufacturers and converters alike can rely on strong dimensional stability, easier processing and greater productivity, leading to increased output of the final shoes produced.

	TEST METHOD	ENERLYTE™ - MIDSOLE	ENERLYTE™ – UNIT SOLE
Molded Density (kg/m^3)	DIN 53540	320-350	380
Hardness (ShA)	ASTM D2240	40	45-50
Tear strength (N/mm)	ISO 34-A (Trouser)	3.1	4.8
Split Tear (N/mm)	SATRA TM65	> 2.5	> 3.0
Tensile strength (N/mm^2)	DIN 53504	4.0	4.8
Elongation (%)	DIN 53504	380	400
Flex fatigue @ 23°C with Texon and cut	DIN 53543	NA	no cut growth
Ball rebound (%) on 10 mm thickness	ASTM D3574	> 60	> 55
Compression set (%)	ISO 815-1 (25%, 24 h @ 23°C)	< 10	< 10
Abrasion resistance (mm^3 loss)	ISO 4946	NA	< 120

These are typical values and should not be construed as specifications.



ABOUT DOW POLYURETHANES' FOOTWEAR SOLUTIONS

For many years, we at Dow have been putting our experience to work in order to create value and service for the footwear industry. Together, with our customers, we develop exciting polyurethane system solutions used for the production of soles for all types of footwear.

Dow Polyurethanes has been striving to offer solutions that meet its customers' most demanding applications. As the diverse and fast-moving global footwear industry becomes increasingly reliant on new material solutions to meet fashion trends and growing consumer needs, Dow continues to step up the quality and performance of its polyurethane technologies for all types of footwear, from slippers and sandals to hiking boots and safety shoes.

Dow's global network of polyurethane manufacturing facilities and systems houses, as well as innovation and service centers, help accelerate both existing and new opportunities, improving the speed and efficiency of application development. Laboratory and equipment capabilities at Dow's technical service centers enable customers to conceptualize, develop, test and validate materials without the need to shut down production lines. Such capabilities positively impact cost efficiencies and help accelerate the commercialization process.

With our global facilities and capabilities, we are well positioned and committed to being a leader in providing top quality solutions designed to help meet the expectations and requirements of our customers. Our technical service and development teams along with technical sales representatives are on hand to help you with your latest challenges. Contact us today.

Contact a Dow representative today to learn more.

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