Confor® - cushioning and impact absorbing foam

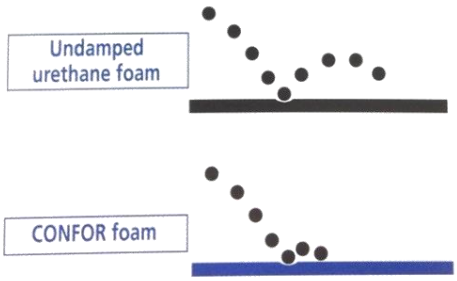
Noise, vibration and shock control

Confor® foams offer a unique combination of properties that are ideal for high energy-absorption applications, enabling them to absorb and dissipate shock and impact. They are also used in comfort management and protective padding applications. It is an open-celled urethane foam, which is breathable, non-irritating to dermal contact, and helps dissipate moisture and perspiration from the body, making it ideal for medical and body contact cushioning applications. Confor® is available in two grades: Confor® M – for most high performance foam applications / Confor® AC – primarily for the aerospace industry.

Exceptional damping properties

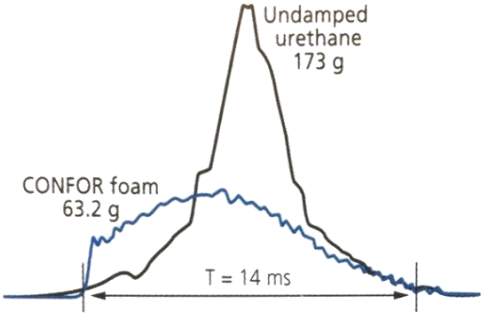
It is the damping properties, engineered into Confor® foam formulations that give the materials their uncompromising comfort and protection capabilities. Damping makes the foams rate-sensitive (displaying different properties under different rates of strain). Whilst Confor® slowly deflect under sustained pressure, damping causes them to behave like stiffer foams when they receive an impact. The foams' ability to dissipate energy prevents them from bottoming out, or collapsing completely, and virtually no energy is returned to the impacting body.

Golf ball drop test



An undamped urethane returns nearly all of the impact energy, while Confor® foam absorbs it.

Drop shock test



A 16.9-pound weight is dropped from a height of 2 feet onto 1-inch-thick materials. This demonstrates Confor® foams' energy-absorption capabilities. The peak acceleration response registers 173g with an undamped urethane foam, but only 63.2g with Confor® foam.

Comfort and protection managment

Confor® foams enable designers to achieve comfort goals with less cushioning material, reducing the design profile and perhaps project costs. For impact-resistance, Confor® foam composites often present a less costly solution when compared to structural or mechanical alternatives.

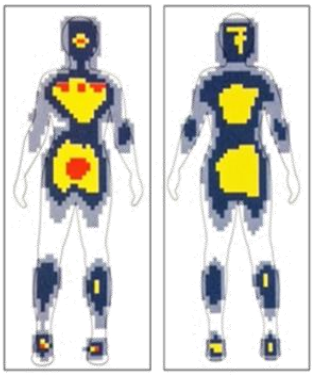
Self-adjusting comfort

Designed to absorb and dissipate shock and impact

Confor® foams development is linked to NASA's Space Shuttle program for an ultra-comfortable, long-term seating material. Because of the materials damping properties and shock-absorption capabilities, the USA Air Force has repeatedly evaluated, and specified, the foams as padding for ejection seats - subjecting them to high G forces on a vertical deceleration tower. Physical protection applications, such as athletic padding or race car head rests, also depend on Confor® foams ability to absorb and dissipate shock energy internally, without hitting bottom, recoiling and amplifying the impact.

Pressure Maps

These two dimensional pressure maps displays the distribution of weight of a recumbent person on a traditional support (left) and on a Confor® foam (right). Light pressure is pale blue, moderate pressure is dark blue the greatest force is yellow and red. Confor® foam distributes the pressure more evenly.



Flexible

Available in different grades and dimensions depending on the application requirements. It is also easy to install. Typical applications include:

- Motorsport – headrest and cockpit
- Gliders or Light Aircraft – seat cushions
- Child or baby car seats
- Aerospace – bulk protection and cruise seats
- Packaging – protect high value devices
- Sports equipment – helmets, body protection and footwear
- Medical – hospital bedding & wheelchair cushions

Typical properties

Property & Test Method	CONFOR Foam - Yellow		CONFOR Foam - Pink		CONFOR Foam - Blue		CONFOR Foam - Green	
	CF-40M	CF-40AC	CF-42M	CF-42AC	CF-45M	CF-45AC	CF-47M	CF-47AC
Density Nominal kg/m³ (lb/ft³)								
ASTM D3574	96 (6.0)	96 (6.0)	96 (6.0)	96 (6.0)	96 (6.0)	96 (6.0)	96 (6.0)	96 (6.0)
Flammability								
UL 94 (Minimum thickness stated)	Listed HBF @ 3mm	Meets HF-1 @ 3mm	Listed HBF @ 3mm	Meets HF-1 @ 3mm	Listed HBF @ 3mm	Meets HF-1 @ 3mm	Listed HBF @ 3mm	Meets HF-1 @ 3mm
FMVSS-302	Meets	Meets	Meets	Meets	Meets	Meets	Meets	Meets
FAR 25.853(a) Appendix F Part I (a)(1)(ii)(12 sec)	No	Meets	No	Meets	No	Meets	No	Meets
CAL 117	No	Meets	No	Meets	No	Meets	No	Meets
RoHS Compliant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ball Rebound %								
ASTM D3574	<1	1	<1	1.3	<1	1.9	<1	2.2
Thermal Conductivity -- K Value								
ASTM C177 W/m*K (BTU in/hr ft² F)	0.040 (0.28)	0.040 (0.28)	0.040 (0.28)	0.040 (0.28)	0.040 (0.28)	0.040 (0.28)	0.040 (0.28)	0.040 (0.28)
Compression Set (%)								
22 hr @ 22C (72F) Compressed 50% ASTM D35741.2	1.2	<1	1.0	<1	<1.0	<1	<1.0	<1
Indentation Force Deflection								
ASTM D3574 Test B1 Modified 25% Deflection for 12"x12"x2" sample 22C (72F) @ 50% Relative Humidity N (lbf)	97 (22)	97 (22)	155 (35)	155 (35)	213 (48)	213 (48)	280 (63)	280 (63)
Tensile Strength kPa (psi)								
ASTM D3574 5.1 mm/min (20 in/min)	48 (7.0)	51 (7.4)	83 (12)	83 (12)	117 (17)	145 (21)	152 (22)	193 (28)
Tear Strength kN/m (lbf/in)								
ASTM D3574 51 cm/min (20 in/min) @ 22C (72F)	0.29 (1.7)	0.29 (1.7)	0.47 (2.7)	0.45 (2.6)	0.64 (3.7)	0.73 (4.2)	0.82 (4.7)	0.98 (5.6)
Compression Load Deflection								
Force @ 10% Compression kPa (psi)	1.4 (0.20)	1.5 (0.21)	2.1 (0.31)	2.2 (0.31)	3.1 (0.44)	3.9 (0.57)	3.9 (0.57)	4.8 (0.69)
Force @ 20% Compression kPa (psi)	1.8 (0.26)	2.0 (0.28)	2.8 (0.40)	2.9 (0.42)	4.2 (0.61)	5.0 (072)	5.6 (0.82)	6.9 (1.0)
Force @ 30% Compression kPa (psi)	2.0 (0.29)	2.3 (0.33)	3.0 (0.44)	3.2 (0.47)	4.5 (0.66)	5.3 (0.76)	5.9 (0.86)	7.2 (1.0)
Force @ 40% Compression kPa (psi)	2.3 (0.33)	2.6 (0.38)	3.4 (0.50)	3.7 (0.54)	5.0 (0.73)	5.9 (0.85)	6.5 (0.94)	7.9 (1.1)
Force @ 50% Compression kPa (psi)	2.9 (0.42)	3.2 (0.47)	4.1 (0.59)	4.4 (0.64)	5.9 (0.86)	7.0 (1.0)	7.6 (1.1)	9.3 (1.3)
Force @ 60% Compression kPa (psi)	3.5 (0.51)	4.4 (0.63)	5.4 (0.78)	5.9 (0.85)	7.7 (1.1)	9.1 (1.3)	9.8 (1.4)	12 (1.7)
Force @ 70% Compression kPa (psi)	6.0 (0.87)	7.5 (1.1)	8.8 (1.3)	9.8 (1.4)	12 (1.8)	15 (2.1)	16 (2.3)	20 (2.8)
Force @ 80% Compression kPa (psi)	16 (2.3)	20 (2.9)	23 (3.3)	25 (3.6)	32 (4.6)	36 (5.3)	40 (5.7)	49 (7.1)

ASTM D 3574C *Modified* 12.7mm thick specimen compressed at a rate of 5.1 mm/min

The data listed in this materials summary are typical or average values based on tests conducted by independent laboratories or by the manufacturer. They are indicative only of the results obtained in such tests and should not be considered as guaranteed maximums or minimums. Materials must be tested under actual service to determine their suitability for particular purpose.

Contact Us

Trelleborg Applied Technologies delivers innovative and reliable solutions that maximize business performance to meet your needs. Our dedicated and highly skilled staff are always on hand to provide seamless process support from initial idea, through to delivery and beyond.

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