

Manufacturers of Quality Silicone Extrusions

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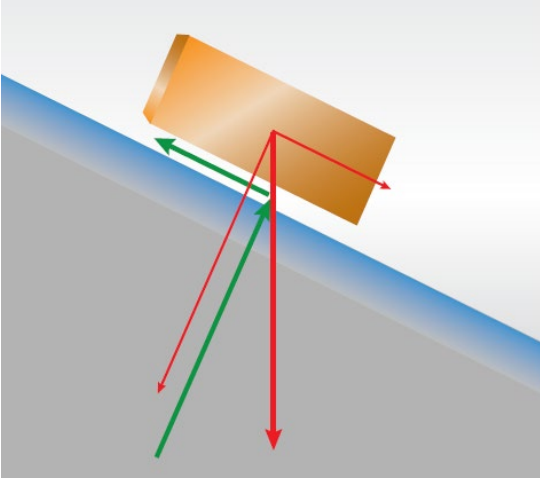
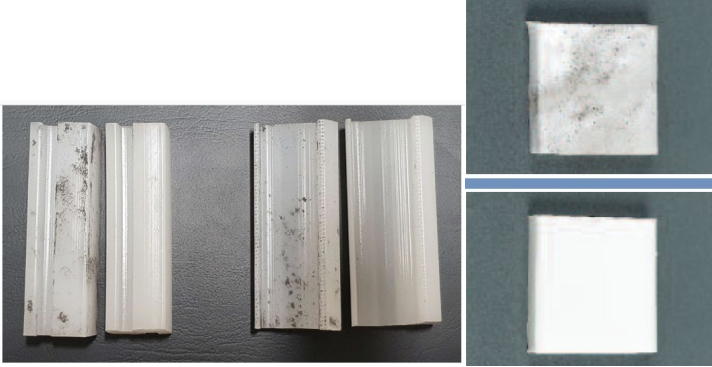
+AF Treatment

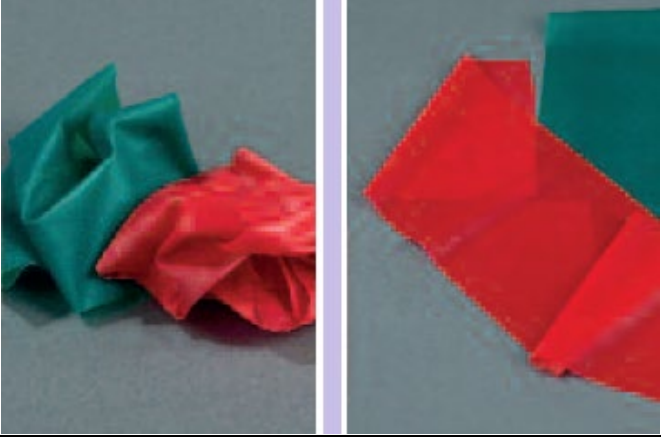
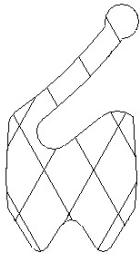

The +AF Treatment from Advanced Materials is an anti friction treatment service that offers solutions to many application problems that arise from using soft flexible elastomers like silicone rubber.

A treated part has a pleasant silky-smooth surface to the touch, although the parts feel as if they have a plastic coating, it is not in fact a coating but a treatment, and no plastics are involved.

The process is that the silicone rubber we manufacture goes into a chamber where a reaction occurs, where only the very outer surface (approx. 0.004mm) is treated, this reaction is **not reversible** and does not become unbound over time; it is **permanent and atomically bonded to the parent material.**

Here are some ways that the +AF treatment can solve application problems:

Application Problem	+AF Treatment effect	
Difficult assembly caused by sticky tacky surfaces. (Especially with softer grades of silicone rubber)	Surfaces to come into contact have less friction facilitating easier assembly. Reduced static friction and breakaway force	
Silicone seal is difficult to slide in dynamic application. (In particular; Lip Seals)	Reduced dynamic friction between silicone and its counterpart	
Dirt particles are attracted, reducing visible appeal	Surfaces are no longer soiled by adhering dirt particles, Parts have a greater visual appeal.	
Unwanted sticky feel when touching seal	Pleasant smooth surface	
Foreign Object Debris (FOD) are attracted potentially causing damage or preventing proper functioning of the device.	Attraction of FOD is greatly reduced. The effect remains even after cleaning and sterilisation	

Application Problem	+AF Treatment effect	
Talc can not be permitted in some sensitive applications where surface tackiness of seal is causing an issue. (Sensitive electronic equipment)	Talc is not needed in applications where +AF is used, the non-stick surface remains stable after extended use.	
Damage caused by thin silicone seal sticking to itself causing tearing.	The silicone no longer sticks to itself resulting in no damage to parts	
Seal does not recover in good time. Lip seal in use is staying down due to temporary bonding to itself, also insufficient sealing due to lip seal warping. (Partial bonding)	Lip Seals with +AF treatment do not temporarily stick down. 	
Hollow seal stays closed. Once compressed seal is not easily separated – opening and releasing them is even more difficult once stuck in one position over an extended period of time.	Hollow seals can be compressed repeatedly – surfaces are now easily separated. Moving parts open and close even after extended periods of being closed together.	

The drawbacks of using this process are that it generally lengthens lead times by three to four weeks, and because of the unique nature of the manufacturing process, a whole chamber fill will be charged for, so for low volumes the process can prove financial unviable at times, but more cost effective on medium and long manufacturing runs.

Friction forces between silicone and glass		Non-Treated	+AF Treatment
Material	Note	(N)	(N)
Silicone Rubber (HCR 60 Shore A)	High Consistency Rubber for Extrusions	9.2	0.8
Silicone Rubber (LSR 50 Shore A)	Liquid Silicone Rubber for Mouldings	15.6	1.0
Silicone Rubber (LSR 30 Shore A)	Liquid Silicone Rubber for Mouldings	10.1	0.7
Fluorosilicone (FVMQ 60 Shore A)	<u>Fluorovinylmethylsiloxanerubber</u> /Fluorosilicone for Extrusions	12.0	6.0

The +AF treatment is a process rather than a substance, so all the materials mechanical properties remain after the procedure.

We use the process in a range of applications, examples include:

- Difficult to fit seals (Especially autoclave seals which fit to a narrow metal channel)
- Critical military uses (Because of reduced debris attraction)
- High End/Top quality consumer goods (Because of the pleasant feel)
- Medical In vitro fertilisation (Reduced contamination risk due to no talc)
...and many, many more.

The +AF treatment can be carried out on extruded profile before other production steps (such as adhesive backing)
Most the parts we manufacture are suitable for use with +AF Treatment, feel free to get in touch with the team about your application.



For Advanced Materials Ltd

A handwritten signature in blue ink, appearing to read 'V. Gladman'.

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