

# MICRO-SEALANTS: ADVANCEMENTS IN ROOF REPAIRS

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**P**reventing and repairing leaks is a common function of any building and roofing contractor's job. Replacing the entire roof or sections of the roof is very often the avenue chosen when leaks are found, but this is evidently an expensive choice. With recent advancements in sealing and leak repair products, building contractors can now add an efficient and cost-effective repair alternative to replacement. An advanced family of waterproofing and leak repair tapes developed by EternaBond Inc. of Mundelein, Illinois, utilizes a proprietary micro-sealant compound formulated to bond to almost any surface that a roofing contractor might need to seal, install or repair. The micro-sealant compound is comprised of a single bond between carbon atoms resulting in an exceptionally stable molecular structure and is based on technology originally developed for underwater/saltwater applications that has since been adapted and reformulated to bond to common roofing and

building materials. Unlike commonly known sealing products, the micro-sealant formula contains no bitumen, butyl or silicone based compounds, all of which have known limitations in terms of installation temperature ranges, hardening in cold weather conditions and their inability to efficiently bond to many common roofing materials.

The micro-sealant compound was developed to withstand the extreme temperature ranges experienced in continental climates and designed to meet strict safety and environmental requirements and is UV stable. It has been formulated to withstand in service temperature ranges from -56°C to +120°C. The micro-sealant compound as well as the support layers or backings are designed to provide long term moisture protection in difficult environments and were developed to resist UV rays, thermal expansion and contraction, ozone degradation, impact and abrasion.

**UV Ray aging tests provided the following results for the 0.2mm (non-coated) micro-sealant tape:**

*4,000 Hour QUV Weather-0-Meter Test with UV Light, UVA 340 in the presence of humidity*

	Zero Hours	1000 Hours	2000 Hours	3000 Hours	4000 Hours
Tensile yield, psi	1,285	1,405	1,275	1,935	1,892
Tensile break, psi	4,013	3,975	3,912	4,347	4,487
Elongation %	793	764	709	736	703

The results show that tensile yields and tensile at break are increasing in value over time, with an average elongation per cent loss of only 2.8% (-11.3% over 4000 hours UV). The Q-Panel Lab products experts call 2,000 hours of UV testing the equivalent to approximately two years of full sun exposure. Therefore, the 4,000

hours of UV testing could be seen to represent four years or more of actual UV exposure. Extrapolating the 2.8% loss of elongation leads to an outdoor life projection of from 18-35 years, depending on variables such as geographic location, traffic, environmental conditions, etc.



**Technical Data Comparison Chart**  
**Typical Tape Properties:**

	<b>EternaBond Micro-Sealant</b>	<b>Butyl</b>	<b>Bitumen</b>	<b>Asphaltic</b>
Life Expectancy	18 to 35 years	+/- 10 years	< 5 yrs	< 5 yrs
Warranty	10 years	10 years	-	-
Contact with solvents or non-cured solvent based products	Short-term	Avoid	Avoid	Avoid
Ponding Water	OK	Avoid	Avoid	Avoid
Low Temp. Application Limit	5°C	5°C	10°C	10°C
High Temp. Application Limit	>66°C	>66°C	>66°C	>66°C
Ozone Stable	Yes	No	No	No
UV Resistant	Yes	Yes	No	No
Self Priming	Yes	No	No	No
Shatter Temp.	-56°C	-48°C	-43°C	-43°C
Elongation	1,300% min.	1,300% min.	750%	750%
Low temp flex	-33°C	-21°C	-9°C	-21°C
High Temp limit (Horizontal)	> 177°C	> 177°C	> 177°C	> 177°C
Vertical	> 107°C	>93°C	>93°C	>93°C
Tensile Strength	45N	10N	10N	10N
Petroleum in formula	No	Yes*	Yes*	Yes*
Off gasses	No	No	NA	NA

**Long term adhesion to:**

EPDM	Yes	Yes (with primer)	No	No
TPO	Yes	No	No	No
Hypolan	Yes	No	No	No
Aged PVC	Yes	No	No	No
Modified	Yes	Yes	Yes	Yes
Metal	Yes	Yes	Yes	Yes
Coated Metal	Yes	Yes	-	No
Copper	Yes	Yes	-	No
Painted Aluminum	Yes	Yes	-	No
Masonry	Yes	Yes	Yes	Yes
Wood	Yes	Yes	Yes	Yes
OSB	Yes	Yes	Yes	Yes
Treated Lumber	Yes	Yes	No	No
Polycarbonate	Yes	No	No	No
Polyethylene	Yes	No	No	No
Polypropylene	Yes	Yes	No	No
Vinyl	Yes	No	No	No
Fabric	Yes	Yes	No	No

Note: \* Petroleum distillates are typically used in these formulations.



While this family of micro-sealant products has been in use since 1985, the current formulation was introduced in early 2000, with over 18 million linear metres installed on a wide range of polymer-based surfaces including EPDM, TPO, PVC & Hypalon as well as various metals, brick, wood and concrete used in gutter systems, copings, skylights, solar panels and HVAC ductwork. Simple preparation techniques are recommended on the surfaces intended for repair or installation such as wiping off the talc powder found on EPDM membranes, cleaning badly damaged surfaces intended for repair or wiping dry wet surfaces prior to installation of the tapes. Because of its original designed purpose as a sealant for underwater applications, the micro-sealant can effectively adhere to most moist non-porous surfaces that have been wiped of excess water, but in the case of porous surfaces such as brick, concrete and tile, the manufacturer recommends the use of a primer after drying the surface and prior to installation of the tapes. Common uses for this advanced product line include simple applications such as patching small leaks in old roofs, parapet walls

and granulated asphalt roofs to more complex repairs such as the complete restoration of the joints on standing seam metal roofs carried out in both the US and Britain. The product range includes a flexible polymer-backed version offered in black, white and grey, a fabric-backed version designed for the backing to accept most roof coatings as well as aluminium-backed tapes, copper-backed tapes and two-sided tapes used frequently to seal two surfaces of either common or dissimilar materials. The range further includes an extra-thick 1.7mm version for use on uneven or granulated surfaces. The manufacturer offers a guarantee of 10 years on the product line even though accelerated aging studies indicate that the installed products are capable of lasting anywhere between 18 and 35 years. Standard rolls are 15m long, with the exception of the copper-backed version that is offered in 7.5m lengths, and width choices start at 1.5cm all the way up to 120cm wide depending on the reference chosen.

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