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### **Comparison of Spraytec with Torching Membrane**

<b>Spraytec</b>	<b>APP Torching Membrane</b>
<b>Application is safe</b> - Spraytec is non-hazardous and does not give off any fumes. * <sup>1</sup>	Requires a flame torch for application. * <sup>2</sup>
Very <b>quick application</b> - 1000m <sup>2</sup> to 2000m <sup>2</sup> a day can be applied by a three man team. * <sup>3</sup>	Typically only 60m <sup>2</sup> per day can be applied by a three man team. This is mainly due to all the detailing work that must be done.
Forms a <b>seamless membrane</b> and therefore no awkward detailing is required. * <sup>4</sup>	Detailing work must be carried out.
<b>Very elastic</b> - the membrane does not break even at 1000% elongation (ASTM D412). * <sup>5</sup>	Elongation is typically only 40 - 50%.
Spraytec can <b>bridge cracks</b> of 4mm width.	Typically crack bridging capability is 2mm.
Spraytec is <b>resistant</b> to UV radiation and to high temperature. * <sup>6</sup>	Although notionally resistant to UV and high temperature, performance is affected by these factors depending on the grade used and on the formulation of the bitumen compound. * <sup>7</sup>
Spraytec possesses a <b>self healing</b> property. If cut or punctured it will repair itself due to its elastic recovery and high level of adhesion.	If cut it will not join back together again.
<b>Cold Flex Resistance</b> is -20°C over a 20mm diameter mandrel.	Cold Flex Resistance is -10°C (or worse) over a 20mm diameter mandrel (tested before torching! Worse after torching!)

## **Comparison of Spraytec with Torching Membrane**

Footnotes for table showing comparison of Spraytec with Torching Membrane.

note \*<sup>1</sup> - Two Spraytec application machines are available. One is electrical, but for large jobs a diesel machine is normally used. However, this machine can be positioned a long way away from the place where the membrane is applied, by using long hoses to deliver the Spraytec liquids to the place of application. We supply reinforced flexible rubber hoses that are 120 metres long with each application machine. Hence the effect of diesel fumes can be minimised.

note \*<sup>2</sup> - In some circumstances fire is a danger when 'torching'. The applicator must always take care not to injure himself or other workmen. In addition, he must take care not to apply too much heat to the membrane during torching, to avoid damaging it. Finally a large number of flammable gas bottles must be stored on site to enable application to proceed without interruption. Special facilities are sometimes required to avoid the risk of explosion.

note \*<sup>3</sup> - Spraytec's quick application not only means much cheaper labour costs but it also means that the site can be handed over much sooner so that the whole construction project can go forward more quickly. This is very important.

note \*<sup>4</sup> - Detailing is the major disadvantage with all sheet membranes. They must be cut to fit the detail and then overlapping pieces must be stuck together. Every such joint is a weak point and a potential place of failure, sooner or later. Even if a torching application appears to be good at the time of application, it may fail later due to movement, which is often greatest at such detailing places. Since Spraytec forms a seamless membrane even at awkward detailing places, it is not only less likely to leak immediately, but it also means that with Spraytec there will be less maintenance work in the future and hence lower costs.

IMPORTANT - this is particularly important for underground work. A badly finished torching detail on a roof is a nuisance, but can be corrected easily. Underground, however, where the waterproofing membrane is covered with concrete and then with other building work, any such leak cannot be repaired without great expense.

note \*<sup>5</sup> - Spraytec's high elasticity means that the membrane can accommodate greater movement in the substrate which means it will not tear and fail. Therefore, there will be less maintenance work in the future and hence lower costs. As explained above, this is particularly important in underground work since any rupture in a membrane cannot be repaired without great expense. In comparison, Torching Membranes have low elongation (but greater strength). It is important to remember that greater Strength is not an advantage. A membrane is not intended to prevent movement but rather, it must move with the substrate.

note \*<sup>6</sup> - Accelerated ageing QUV tests have shown that Spraytec still has elongation of more than 1000% after 1000 hours in the QUV machine.

Experience on exposed roofing in Europe shows that even after 12 years of actual weathering the flexibility and elongation are almost unaffected.

note \*<sup>7</sup> - Torching - tests carried out in Japan showed that many torching membranes lose much of their flexibility as a result of torching. Flexibility tests are normally done on untorched samples, which give a false indication of how the membrane will perform after application. (Please refer to the attached test results sheet.)