The Micrex Process is complex.

We have identified over 30 variables – independent from changes in the base material. Three of the most impactful variables involve the interaction between time (speed) and temperature.

Many applications rely on supplemental heat to "set" the crepe pattern.

This could take two forms:

1. **In non-polymerics heat** (sometimes with some added moisture) will lock in the compaction in the same way as one might iron a shirt.
2. **With blends of thermoplastic and non-thermoplastic fiber**, elevated heat can "set" the crepe. This is comparable to the heat setting in an oven.

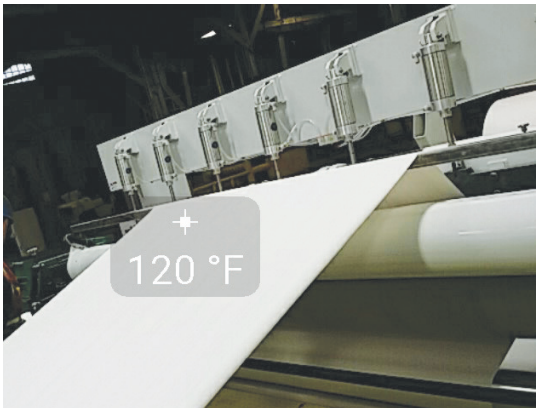
A preset temperature is maintained on the machine by circulating heated thermal fluid through the main roll.

As a Micrex®/Microcreper™ increases in speed, the creping process itself generates frictional heat. The faster the process, the greater the heat generated in the treatment cavity. At the same time, materials which rely on supplemental heat provided by the heated main roll are spending less time in contact with the roll and are less impacted by the supplemental heat. Whether the frictional heat or the supplemental heat dominates depends on the substrate construction.

In our lab we have measured temperatures on the outside of the treatment cavity at high speed in excess of 750 °F. The temperature inside the treatment cavity, while hard to measure, is significantly greater. Although the material being processed may only see these temperatures for a fraction of a second, this can limit the maximum operating speed for that material.

Some customers have learned to alter their substrate to lessen the amount of heat generated. One example: small amounts of Latex can act as an effective lubricant.

In the two pictures below note the temperature rise in the material. In this case the ambient temperature was about 55 °F and no supplemental heat was used.



Note: red and blue images taken with infrared camera

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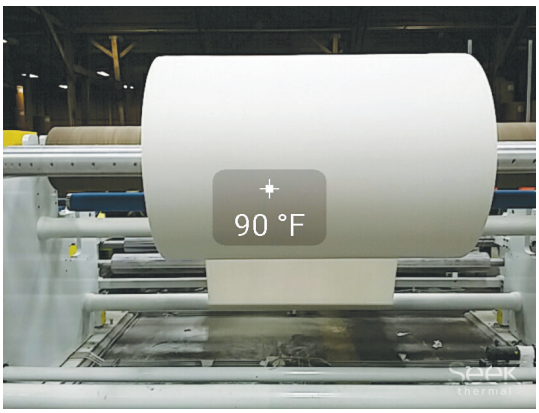
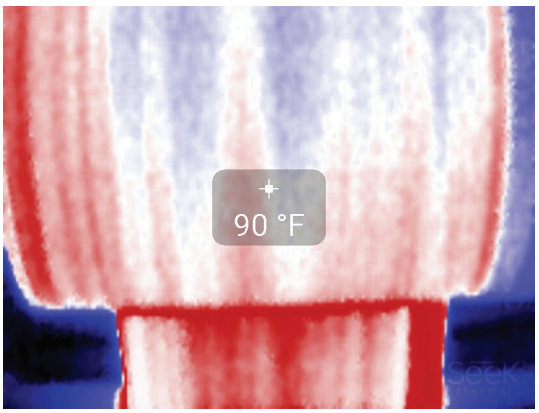
This second set of pictures shows the heat being retained in the finished roll.

Note below the bands (red) of higher temperature. No material is without variation. This particular cellulosic substrate had varying density across the web. Areas of greater density require more mechanical energy to crepe, hence the higher friction heat produced.





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