

Lumicene®

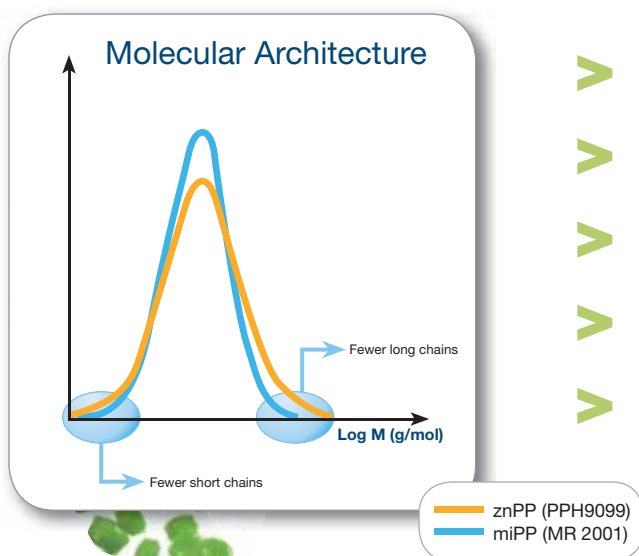
MR 2001 and MR 2002
a step forward for nonwovens

Polypropylene

Polypropylene is widely used for the production of nonwovens entering in the manufacture of hygienic or technical articles.

The metallocene grades Lumicene® MR 2001 and MR 2002 have outstanding properties.

- > **Very narrow molecular weight distribution** without requiring the need for any modification of the resins after the reactor outlet.
- > **High product regularity** allows performance, which was not achievable with conventional polypropylene grades.



- > **Fine fibers**
- > **Cleaner process**
- > **Less fumes & condensates**
- > **Enhanced consistency**
- > **Stronger nonwovens**

Based on these advantages, several strategies appear:

- > **Release your creativity to innovate in hygiene:** improved tenacity, enhanced coverage, better softness, higher barrier properties.
- > **Produce lighter nonwovens with similar characteristics** as produced with Ziegler-Natta polypropylene but at a lower fabric weight, with better production stability and with less fumes and condensates.





Cleaner process

Metallocene-catalysed polypropylene contains fewer short chains, which means less maintenance. The absence of peroxide in metallocene polypropylene results in less fumes and condensates.

Total Petrochemicals Lumicene® MR 2001 and MR 2002 are more environmental-friendly products.

At a temperature intermediate between staple and spunbond settings (260°C), emissions expressed in total equivalent carbon content are 4 to 5 times lower with Lumicene® MR 2001 than with a controlled rheology Ziegler-Natta PP.



Enhanced consistency

Difference in melt flow index and molecular weight distribution within and between lots are reduced compared to Ziegler-Natta Polypropylene. As a consequence, fewer fiber breaks are observed and fewer adjustments are needed between lots. Moreover, the absence of peroxide also allows for an enhanced spinning consistency. Indeed, reactive extrusion involves an additional heterogeneous process step, which represents a potential source of quality fluctuations.

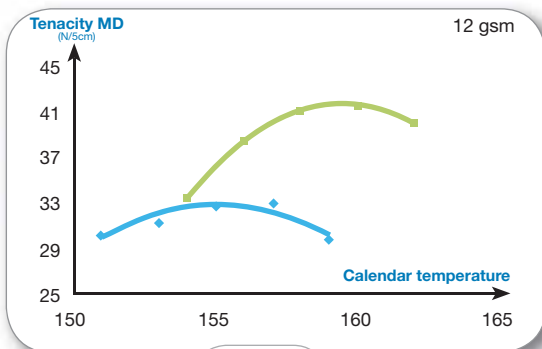
Metallocene catalysis directly results in a narrow molecular weight distribution and therefore strongly reduces the classical causes of gel formation.



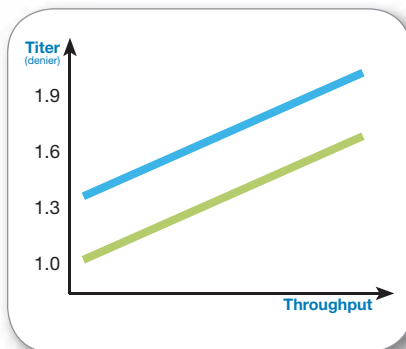
Finer fibers

Metallocene-catalysed polypropylene also contains fewer long chains. These high molecular weight chains contribute to higher melt strength. From a processing point of view, the high-speed performance is directly affected by the resistance to melt drawdown, or melt strength in the spin line. Stress-induced crystallization is also a dominant phenomenon in the fiber spinning process. In combination with a lower extensional viscosity and since it is mainly initiated by the long chains, crystallization is delayed with metallocene-based polypropylene. This allows for a smoother attenuation of filaments and results in much finer fibers.

The finer fibers are appreciably lighter. The number of fibers per surface unit can be increased, which improves both the mechanical and barrier properties of the nonwovens.



■ MR 2001
◆ PPH 9099



Stronger nonwovens

The more complete drawing of metallocene polypropylene fibers, coupled with a better web coverage accounts for much improved tenacity.

The higher strength is easily transposed to the nonwovens by optimized thermal-bonding, by hydro-entanglement, by needle-punching or other consolidation techniques, starting either from staple fibers or from spunlaid filaments. An increase of 20% is reached using the same fabric weight and throughput as with a conventional grade. Furthermore, lower elongation at low load enables to unwind the nonwoven bobbins faster. **The significant improvement in mechanical properties obtained with Total Petrochemicals Lumicene® grades directly enable the downgauging of nonwovens.**

Marketing and Sales

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