



Thickness of Hot Melt Coatings & Pressure Sensitive Adhesives

APPLICATION NOTE

Hot melt pressure sensitive adhesives are a unique class of bonding materials used in a wide range of industrial applications and consumer products. While solid at room temperature, these adhesives melt readily becoming free-flowing liquids, which can be applied to a desired bonding site in a precisely controlled manner. Upon cooling, the adhesive solidifies to rapidly form a strong bond between two materials.

SUMMARY OF THE PROCESS

In packaging, converting, assembly, bookbinding, nonwovens, footwear and many other applications, hot melt glues and adhesives offer the critical advantage of fast bonding process.

Unlike water-based or solvent-based adhesives, hot melt adhesives do not require lengthy drying times. Hot melts begin bonding almost immediately after application, as they cool down to their solidification point. This fast solidification is ideal for use on highly automated manufacturing lines that require rapid bond formation.

Paraffin wax is largely acknowledged as the original hot melt adhesive coating. Polymer and copolymer resins have fathered a host of formulations having wide performance properties that continue to expand the horizons of hot melt adhesives.

QUALITY PARAMETERS AND MEASURING POINTS

Roll and die coaters, extruders, and doctor blade configurations are among the many methods of applying hot melt adhesive. Roll coaters offer more flexibility than die application methods as they can be changed over more quickly and allow for pattern coating. Die coaters offer more precision, especially in the 15-20 grams/meter² (GSM) range.

Manufacturers need to apply just enough hot melt adhesive for proper bonding. Excess adhesive is not only costly, it adversely effects bonding performance. Measuring hot melt coating on-line with NIR sensors speeds start up, reduces scrap and increases quality control and assurance.



APPLICATION NOTE Hot Melt Coating & Pressure Sensitive Adhesives

The Guardian-HD has been used to measure hot melt coating successfully for over twenty-five years. The sensor head is mounted 15-40 cms (6-16") above the paper, plastic, nonwoven or other substrate at an angle of 18° from perpendicular. The NIR non-contacting hot melt sensor is extremely accurate and stable with no regulatory requirements.

A fixed point hot melt thickness measurement can be acquired using an MCT460 stand-alone sensor or the Guardian-HD system may be employed to scan across the web to provide cross direction web profile and machine direction trends.

VALUE AND QUALITY

Implementation of NIR technology to measure hot melt coatings speeds start up, increasing production, reduces scrap and allows for quality data archiving by roll or run. Without an on-line measurement system, the line must be started up and sample collected for laboratory analysis. This is repeated until the system is optimized. With an on-line system the process is optimized in real-time resulting in greater efficiency.

Quality data archiving via Ethernet, whether from fixed sensors or the Guardian-HD System, allows roll or runs to be associated with startups, shifts or operators and may protect against unwarranted customer complaints.



[Scan here to learn more about the Guardian-HD Web Profiling Series Analyzer](#)



The Guardian-HD Web Profiling Series is a rugged and world-class analyzer to measure moisture, coat weight, adhesive thickness, and web temperature for all paper, film, and web-converting processes.

GUARDIAN-HD WEB PROFILING SERIES ANALYZER

- Rugged, sealed industrial frame and linear actuator withstands hot and humid environments common with paper and converting processes
- Automatic edge detection senses roll width to streamline set-up processes, and realigns to accommodate web drift
- Configurations available to monitor and control multiple Guardian-HD systems simultaneously
- Easily connect to closed-loop control systems or local alarms

GUARDIAN-HD NIR MEASUREMENTS

Moisture Range:	Min 0.1%, Max 95%
Coatings Range:	Min 0.1 GSM, Max 250 GSM
Moisture Accuracy:	±0.1%
Coatings Accuracy:	±0.1 gr/m
Repeatability:	±0.1%

KPM Analytics

8 Technology Drive | Westborough, MA 01581 USA
Phone: +1 774.399.0500
www.kpmanalytics.com | sales@kpmanalytics.com

©Copyright 2023. All rights reserved. 04.001.297.EN.v2.1

