

PEEL BEHAVIOUR OF HOT MELT PRESSURE SENSITIVE ADHESIVES

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Hot melt pressure sensitive adhesives (HMPSA) are 100% solid thermoplastic materials. They do not contain any volatile organic compounds. Therefore, they are safe during production, transportation, storage, and application. Most importantly, they are environmentally friendly and are not harmful to human health. Because of the fast set feature, HMPSA are used for high speed production lines. The application is various - such as packaging, tapes, labels, wood-working, hygiene, automobile, medical, electronic, construction, etc. [1]

Generally, HMPSAs are composed from high molecular weight thermoplastic, tackifier, mineral oil, antioxidant, and other special additives – such as filler, colorant, and low molecular weight polymer if needed [2]. Most of these ingredients are thermoplastic materials and require a heated environment to mix them together. While offering aggressive bonds at room temperature HMPSAs most unique and defining feature is that it is capable of cold flow under a light finger pressure. These adhesives require no activation by water, solvent or heat in order to exert a strong adhesive holding force with substrates such as paper, plastic, glass, wood, cement and metal. They have sufficient cohesive holding power and elastic nature so that, despite their aggressive tackiness, they can be handled with fingers and removed from smooth surfaces without leaving a trace. [1-3]

The tack and peel behaviour of three types of HMPSA based on styrene block copolymers were compared and the results discussed in this study.

[1] Verma, A. K., Ajit, S., & Karanki, D. R. (2016). Applications of PSA. In *Reliability and Safety Engineering* (pp. 393-455). Springer, London.

[2] Zhao, Z., Liu, P., Zhang, C., Liu, W., Ding, Y., Zhang, Y., ... & Tang, T. (2017). Synthesis and structure–property relationships of SIS-g-PB copolymers and their application in hot-melt pressure-sensitive adhesives. *RSC Advances*, 7(70), 44068-44075.

[3] Sotoodeh Nia, Z., Hohmann, A., Buss, A., Williams, R. C., & Cochran, E. W. (2018). Rheological and physical characterization of pressure sensitive adhesives from bio-derived block copolymers. *Journal of Applied Polymer Science*, 135(34), 46618.