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WATERBORNE SILICONE PRESSURE SENSITIVE ADHESIVE DISPERSIONS

Silicone pressure sensitive adhesives (PSAs) are widely used in a diversity of large and fast-growing applications. This includes general purpose masking tapes/labels and protective films that feature super wetting to substrates, stable adhesion over aging, and high temperature stability. Most commercial silicone PSAs are offered in aromatic solvents such as toluene and xylene. To meet the global trend on sustainability, the tape market is asking for solvent-free silicone PSAs and/or environmentally friendly solvent PSAs. A series of waterborne silicone PSA dispersions were developed with various silicone MQ resin types and MQ Resin/Polymer ratios that give 180° peel adhesion up to 1100 grams/inch and probe tack up to 300 grams at a 35 µm PSA film thickness. The series of silicone PSA films also exhibits heat resistance up to 220°C. The new environmentally sound silicone PSAs reduce the need for undesirable solvents used in the incumbent solution-based silicone PSAs while still maintaining the inherent benefit of silicone PSAs. Additionally, hybrid formulations with organic PSA emulsions can be prepared more practically via simple blending with these waterborne silicone PSA dispersions. The development work and resulting silicone PSA dispersions can provide the tape and film market much safer materials by eliminating solvent usage with a more sustainable solution.