Adhesive Technologies

A complete guide to Avery Dennison adhesive solutions

AVERY DENNISON

Adhesives inspired by innovation

For 90 years, Avery Dennison has developed adhesive solutions that meet the ever-changing needs of the labeling and packaging industry. We make proprietary adhesives and lead the development of sustainable, innovative and compliant solutions across all sectors.

Today, you'll find Avery Dennison adhesives everywhere you look. With over 400 adhesive scientists working in seven R&D centers worldwide, we solve challenges in real time and offer customized adhesive performance to customers in every corner of the world.

Adhesive technology to meet your needs

Avery Dennison offers three adhesive coating technologies : emulsion, hotmelt and solvent. Having three coating technologies allows us to engineer adhesives that offers a wide range of functionality within each type of chemical composition.

While our main adhesives are acrylic and rubber-based, through our global network we are able to develope hybrid and silicone adhesives for challenging applications. Dozens of specifically tailored adhesive are available in ASEAN alone and we are able to modify the adhesive composition to meet your specific needs.

Adhesive chemical composition	Acrylic	Rubber
Adhesive technology	Emulsion, Solvent, UV Warmelt	Hotmelt

Emulsion acrylic
Suitable for high-speed conversion, emulsion acrylic adhesive is an excellent choice if clarity, long-term adhesion and resistance to heat, UV and plasticizers (PVC etc.) are required. Food direct and low-migration emulsion acrylic are also available for food and pharmaceutical applications respectively.

Solvent acrylic
Solvent acrylic adhesives provide strong adhesion to various substrates with excellent resistance to water, heat, and chemicals. They are Ideal for automotive labels, pasteurization, and sterilization applications, as well as reclosure and tamper-evident uses.

Hotmelt rubber
Hotmelt rubber adhesive sticks strongly to various surfaces, from cardboard to reusable coffee cups. It excels in low-temperature settings, resists chemicals, and bonds well even on rough or dirty surfaces. Most of our hotmelt rubber adhesives include 30% biobased materials enhancing the cicularity of material used.

AD TruKleen™
These long-lasting adhesives suit applications for industrial, outdoor, and chemical containers. AD TruKleen provides good heat and chemical resistance offering excellent performance across every metric.

Key performance factors

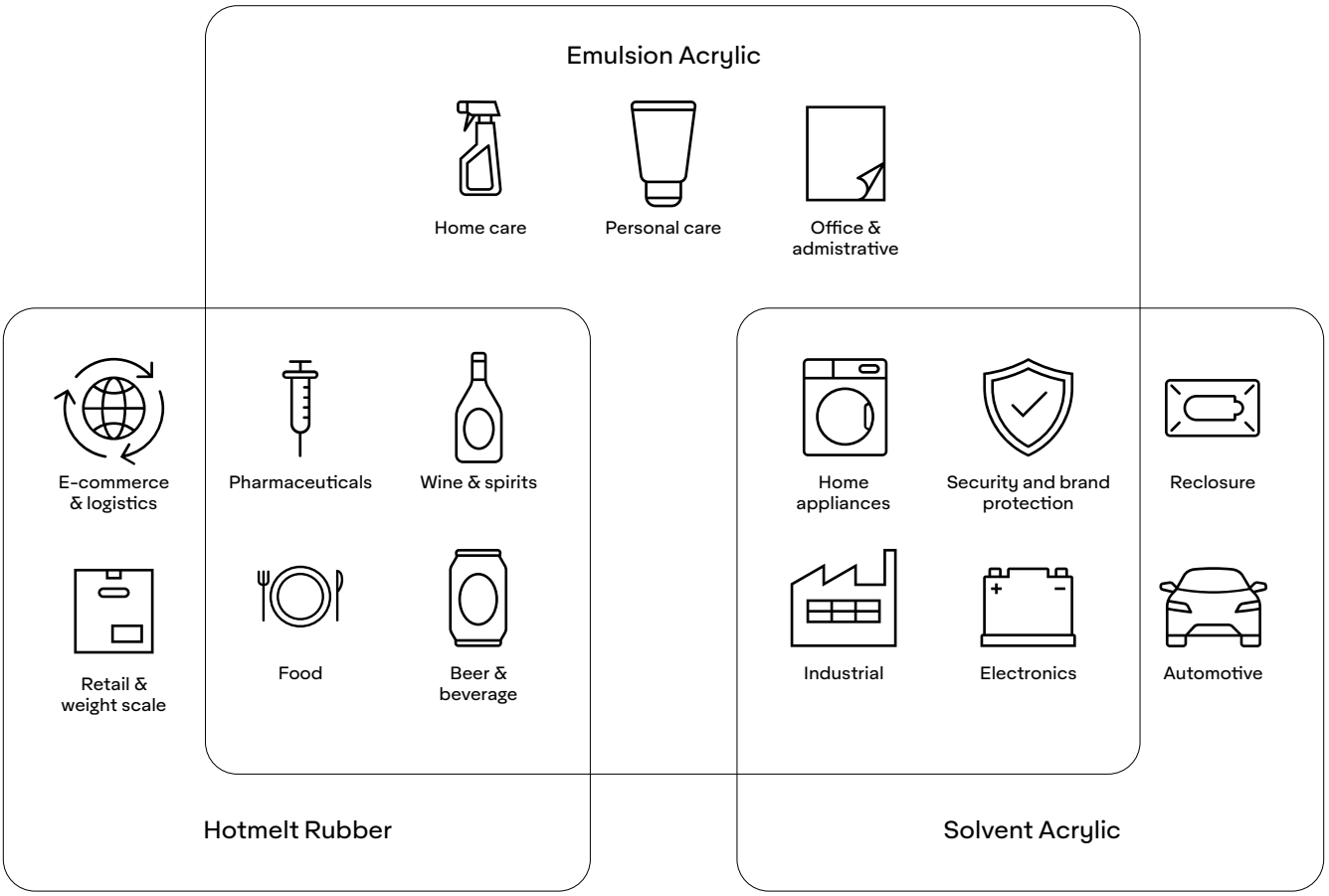
		Hotmelt Rubber	Emulsion Acrylic	Solvent Acrylic	UV Warmelt
Initial Tack	Weak → Strong				
Ultimate Adhesion	Weak → Strong				
Adhesion on LSE	Weak → Strong				
Service Temp. Range	Narrow → Wide				
Solvent Resistance	Weak → Strong				
Water Resistance	Weak → Strong				
UV Stability	Low → High				
Converting Speed	Slow → Fast				
Clarity	Poor → Good				

* For more information on solvent acrylic and AD TruKleen™ kindly refer to our sales representatives.

Choosing the right adhesive

We have an adhesive for every standard application. Plus, variations can be custom engineered to meet your specific requirements. But first, consider these factors when selecting your next adhesive.

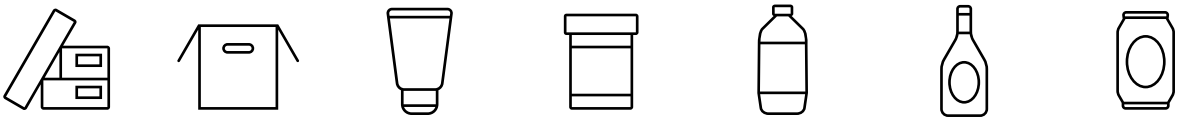
Application areas
Depending on the use case and conditions, different application areas tend to use different adhesive technologies. While we design and propose adhesives based on your specific needs and requirements, a good start towards choosing the right adhesive technology would be through the segment use case and generally these adhesive technologies are used as shown.



Application surface

Not all surface materials are equal, despite their similar appearances. Surface energy significantly influences how well an adhesive can bond to it.

Substrates with high surface energy like PET and glass facilitate better adhesion. Conversely, substrates like HDPE, with low surface energy, pose challenges for adhesives to adhere strongly. Our adhesive portfolio caters to a wide range, and our skilled team is ready to assist you in selecting the ideal match for your specific application requirements.



	Corrugated	Cardboard	HDPE/LDPE	PP	PET	Glass	Metal
Common applications	Carton box	Cardboard box	Face cream Shampoo Milk	Food Pills	Soft drink Bottled water Detergent	Beer Wine	Beer Soft drink

Increasing Surface Energy

The presence of moisture, dirt and dust on substrate is also an important consideration as it will impact the bonding between label and substrate. Adhesive with higher initial tack should be considered under such conditions.

Functionality

An adhesive is only complete when its functionality matches the application needs. For instance, it may need to deliver clean removability, water-whitening resistance, or act as a security solution by showing if the packaging has been tampered with. Another important functionality is resealability. Personal or household care wet wipes require reclosure labels to keep out oxygen and preserve moisture. Food packaging uses these labels to prevent spills and securely hold the contents in place.

Sustainability

It's our mission to lead the shift towards a circular economy by continuing to develop solutions that meet recycling guidelines and standards even better than before. Choices range from adhesives that remove cleanly from packaging in the recycling process, to those that can be recycled along with the container without contamination. No matter the challenge, we will find a solution that enables your sustainability vision.

Avery Dennison adhesives that enable recycling and reuse of different packaging types

Product name	Adhesive	Packaging type
AD CleanFlake™	SR3013N	HDPE, PET (recycle)
Wash-Off	S6000	Glass (reuse)

Compliance

Regulations designed to protect the health and well-being of the public are critical in key industries such as food and medicine. We work closely with customers, end users, and industry associations to develop adhesives that are compliant with both current and future regulations in the markets where our products are sold.

UL or CSA approval

Labels attached to machinery and hardware must stay on to convey safety warning and cautions. It is important for the adhesives used to withstand various extreme conditions that would otherwise cause the label to peel off. UL or CSA approved adhesives have been tested to meet these requirements.

BfR or FDA approval

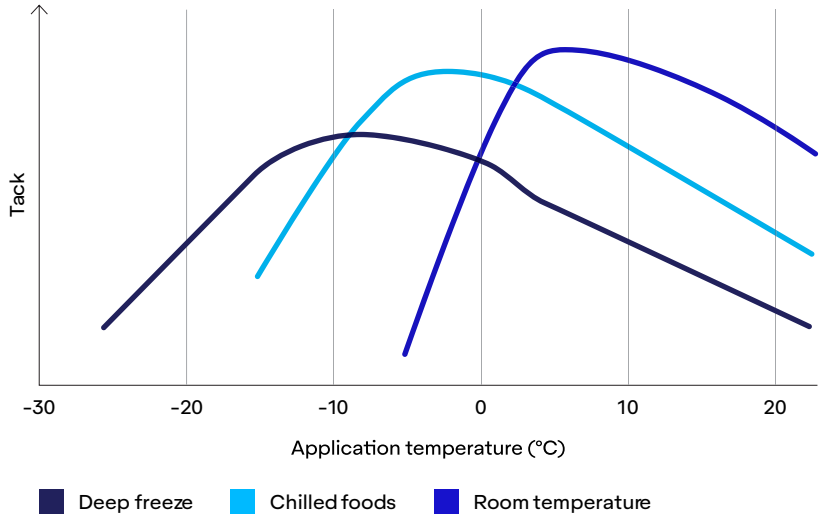
Food-safe adhesives are classified into indirect and direct food contact. Indirect food adhesives are safe to be applied on food containers with a functional barrier separating the food content from the adhesive. Direct food adhesives are safe to be applied directly onto food.

Temperature

Consider both application temperature and service temperature to ensure labels adhere during application and throughout the product life cycle.

Most of our adhesives are tailored for use at ambient conditions, with a minimum application temperature of +5°C. Each adhesive has an ideal application range where tackiness is maximized. For instance, an adhesive that is easily removable at room temperature (low tack) may become permanent at lower temperatures (high tack).

Effect of application temperature on tack



Once in use, our standard adhesives can withstand temperatures from -20 C to + 80 C. Label printers and brand owners can further expand this range by utilizing pressure-sensitive adhesives beyond typical service temperatures, such as:

Adhesive for extreme cold

Cold chain adhesive S2196 can be applied at temperatures as low as -50°C and can withstand service temperatures as low as -196°C, vital for medical applications like vaccines, stem cells, clinical trials, and bio-banking.

Adhesive for extreme heat

Our specially-engineered S6066 adhesive can cope with extreme heat. It resists short-term temperatures of up to +330°C, making it an excellent choice for the metal industry.

Cold Temperature Adhesive Selection Guide

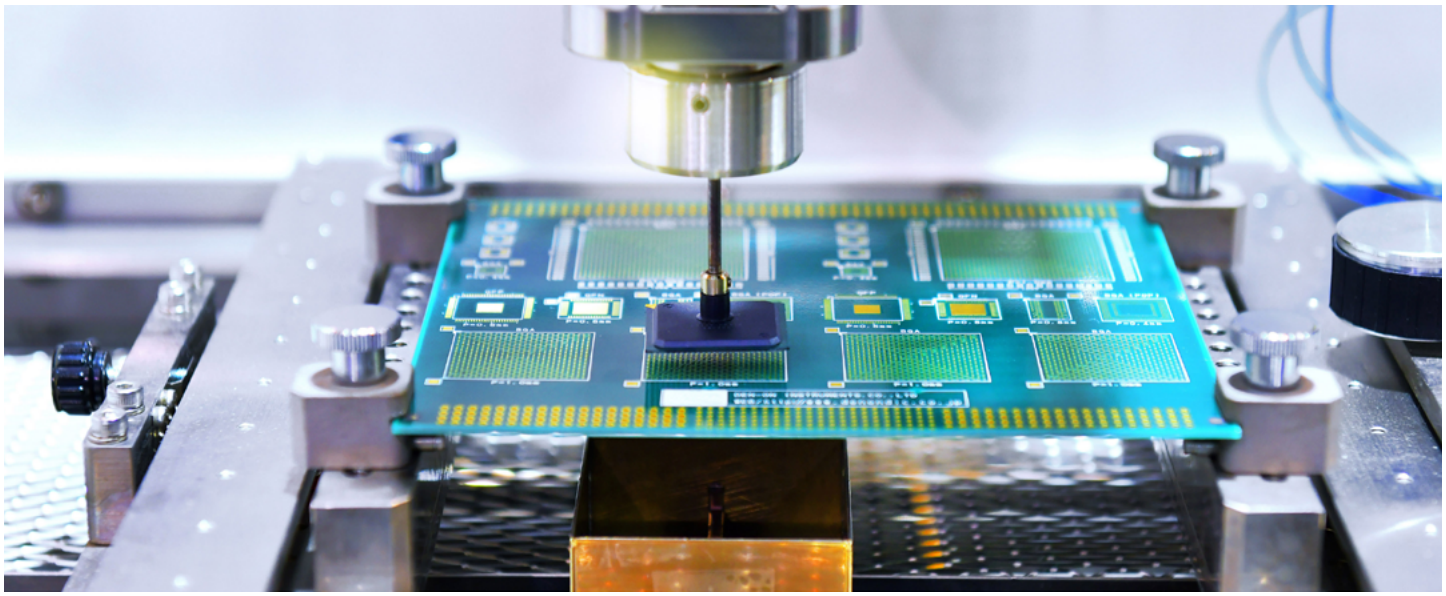
				Application Temperature				
Application Area	Adhesive	Technology	Service Temp.	4°C	-5°C	-10°C	-15°C	-20°C
Chilled & Frozen Food	C7501	Emulsion Acrylic	-50°C to 90°C	●	●	●	●	●
	C2075F	Rubber Hotmelt	-50°C to 70°C	●	●	●	●	●
	C2076C	Emulsion Acrylic	-40°C to 70°C	●	◑	◔	◔	-
	S2800	Rubber Hotmelt	-50°C to 80°C	●	●	●	●	◔
Retort Food	C7050	Emulsion Acrylic	-40°C to 145°C	●	◕	◔	◔	-
Pharmaceutical (Cryogenic & Dry Ice)	S2196	Solvent Acrylic	-196°C to 120°C	●	◑	-	-	-
Pharmaceutical (Primary Blood Bag)	AL171	Solvent Acrylic	-80°C to 140°C	●	◑	-	-	-
	MI465	Solvent Acrylic	-80°C to 140°C	●	◑	-	-	-

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion - Not applicable NT Need testing

DISCLAIMER — Testing was conducted using an Glass surface, according to FTM9. The ratings provide a directional indication of adhesive performance and should not be interpreted as product footprint data. We recommend testing a complete label construction for your specific application upfront, to ensure the desired level of adhesion during labeling.

High Temperature Adhesive Selection Guide

Application Area	Adhesive	Technology	Service Temp.	Min. Application Temp.
PCBs, Computer and Medical devices	S8088S	Solvent Acrylic	-40°C to 300°C	10°C
	S8095SD	Solvent Acrylic	-40°C to 300°C	10°C
Heavy Industrial Labels	S6066	Solvent Acrylic	-40°C to 330°C	10°C



DISCLAIMER — Testing was conducted using an Glass surface, according to FTM9.

General Purpose Adhesive

Over the years, we have continuously improved our general purpose adhesive formulations. We now offer a plethora of general purpose adhesives that adhere to a wide range of surfaces and conditions.

General Purpose Paper & VI adhesive

Emulsion Acrylic

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Application surface: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
S2420	Ultra High	Strong	5°C	-20°C to 80°C	●	●	●	●	●	●	●	●
S2090	High	High	5°C	-20°C to 80°C	●	●	●	●	●	●	●	●
S2492	Medium	Medium	5°C	-20°C to 80°C	-	◑	●	●	●	●	●	●
S1010	Medium	Medium	5°C	-20°C to 80°C	-	◑	●	●	●	●	●	●
S1005	Fair	Fair	5°C	-20°C to 80°C	-	-	◑	◑	●	●	●	●
S1002	Low	Low	5°C	-20°C to 80°C	-	-	-	◔	◑	●	●	●

Rubber Hotmelt

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Application surface: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
S2050N	Ultra High	Strong	10°C	-40°C to 70°C	●	●	●	●	●	●	●	●
S2025N	High	High	10°C	-40°C to 70°C	◕	●	●	●	●	●	●	●
S2010N	Medium	Medium	10°C	-40°C to 70°C	-	◑	◑	◑	●	●	●	●

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion - Not applicable NT Need testing

General Purpose Film adhesive

Emulsion Acrylic

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Application surface: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
S3000	High	Strong	5°C	-20°C to 80°C	-	-	●	●	●	●	●	●
S4700	High	Strong	5°C	-20°C to 80°C	-	-	●	●	●	●	●	●
SR3013N	High	High	5°C	-20°C to 80°C	-	-	◑	◕	◕	●	●	●
S692N	High	High	5°C	-20°C to 80°C	-	-	●	●	●	●	●	●
S7210	High	High	5°C	-20°C to 80°C	-	-	◑	◕	◕	●	●	●
S6800	High	High	5°C	-20°C to 80°C	-	-	●	●	●	●	●	●

Rubber Hotmelt

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Application surface: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
S3010N	Ultra High	High	10°C	-40°C to 70°C	◑	◕	●	●	●	●	●	●

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion – Not applicable NT Need testing

Special Purpose Adhesive

Certain applications demand specially designed adhesives, such as those that perform in sub-freezing temperatures or allow label reclosure on wet wipes. The tables below provide a selection of adhesives tailored for these specific needs and more.

Chilled and Frozen Food Adhesive

Common adhesive will peel off when applied on moist or oily surfaces. Our frozen food adhesives are specially engineered to be applicable on low energy substrates, freezing conditions. and exhibits strong long term adhesion under microwave and even retort conditions.

Emulsion Acrylic

					Special application conditions						Application surfaces							
Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Freezer	Chilled	Wet surface	Microwave	Direct food	Retort food	Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
C7501	High	High	-40°C	-50°C to 90°C	✓	✓	✓	✓			-	-	●	●	●	●	●	NT
S2800	Medium	Medium	-15°C	-50°C to 80°C	✓	✓		✓	✓		-	-	◕	◕	◕	●	●	NT
C7050	Medium	Medium	-4°C	-40°C to 145°C		✓		✓	✓	✓	-	-	●	●	●	●	●	NT

Rubber Hotmelt

					Special application conditions						Application surfaces							
Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Freezer	Chilled	Wet surface	Microwave	Direct food	Retort food	Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
C2075F	High	High	-20°C	-50°C to 70°C	✓		✓				◕	●	●	●	●	●	●	NT
C2076C	High	Medium	-5°C	-40°C to 70°C		✓	✓				◕	◕	●	●	●	●	●	NT

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion - Not applicable NT Need testing

Returnable Glass Bottle Adhesive

Returnable glass bottles require solutions that enhance their circularity — labels that stay firmly in place during use but can be easily removed that does not hinder the glass return process. Avery Dennison Wash-off solution enables the glass return process while enhancing the shelf appeal of your packaging with its excellent clarity.

Emulsion Acrylic

					Special application conditions			Application surfaces								
Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Chilled	Wet Surface	Ice bucket	Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
S6000	Medium	Medium	5°C	-20°C to 80°C	✓	✓	✓	NT	NT	NT	NT	NT	NT	●	NT

● Excellent adhesion ◕ Good adhesion ◗ Medium adhesion ◔ Low adhesion – Not applicable NT Need testing

Removable

Often times customers are faced with frustrating labels that leaves residue when peeled. With the right removable solution, labels will stay firmly in place during the point of sale while easily removed without residue when consumed, Avery Dennison offers a range of removable solutions that does the job.

Emulsion Acrylic

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Paired Facestock: Paper	Paired Facestock: Film	Application surfaces: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal
R423	Low	Low	-15°C	-40°C to 70°C	✓		-	◑	◕	◕	◕	●	●	●
R450	Low	Low	-12°C	-30°C to 80°C	✓		-	◔	◕	◕	◕	●	●	●
R480	Low	Low	-15°C	-40°C to 70°C		✓	-	◔	◕	◕	◕	●	●	●

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion – Not applicable NT Need testing

Reclosure

The adhesive is at the core of successful reclosure technology. It plays an essential role in keeping the label effective during its use by providing a reliable seal that keeps the wipes away from external factors, retaining their condition. All the while, it must provide an unchanging opening and closing experience throughout the use of the product. Avery Dennison reclosure portfolio are specially designed for different wet wipes application to meet your needs.

Solvent Acrylic

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Special surfaces: Matte PP	Special surfaces: Gloss PET	Application surfaces: Corrugated	Application surfaces: Cardboard	Application surfaces: PP	Application surfaces: LDPE	Application surfaces: HDPE	Application surfaces: PET	Application surfaces: Glass	Application surfaces: Metal
SR134	High	High	-5°C	-35°C to 80°C	✓	✓	-	-	●	●	●	●	NT	NT
SR136	Medium	Medium	-5°C	-5°C to 80°C	✓		-	-	●	●	●	●	NT	NT
SR123	Medium	Medium	5°C	-35°C to 80°C	✓		-	-	●	●	●	●	NT	NT

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion - Not applicable NT Need testing

Durable Goods Adhesive

Durable goods labels must not peel or lift up when exposed to UV, heat and moisture or when applied on rough surfaces. For many years, we have developed a range of durables adhesive ready common durable application such as electronics, appliances and tyre point of purchase labels.

Emulsion Acrylic

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Special application conditions: Electronics	Application surfaces: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal	UL Recognised
S333	High	High	-4°C	-40°C to 145°C	✓	-	-	◕	◕	◕	●	●	◕	✓
S369	Medium	High	-4°C	-40°C to 145°C	✓	-	-	◑	◑	◑	◕	◕	◑	
S8020	Medium	Medium	5°C	-20°C to 80°C	✓	-	-	◑	◑	◑	◕	◕	◑	✓

Rubber Hotmelt

Adhesive	Initial tack	Ultimate adhesion	Min. app. temp	Service temp.	Special application conditions: Vulcanized Rubber	Application surfaces: Corrugated	Cardboard	PP	LDPE	HDPE	PET	Glass	Metal	UL Recognised
S2060	High	Strong	10°C	-40°C to 70°C	✓	●	●	◑	◑	◑	◕	◕	◕	
TS79	Ultra High	Strong	0°C	-40°C to 70°C	✓	●	●	◕	◕	◕	●	●	●	

● Excellent adhesion ◕ Good adhesion ◑ Medium adhesion ◔ Low adhesion - Not applicable NT Need testing

Tailoring solutions for your needs

Not what you are looking for? As long as it's about labels we can work together to develop a solution. We offer various services to develop innovative labeling solutions with you.

Mix & Match
Our Mix & Match service makes it quick and easy to find the perfect labeling solution for your needs. Backed by Avery Dennison's expertise, our technical specialists work with you to identify the ideal product—whether it's an existing option or a custom-made solution tailored precisely to your application. With Mix & Match, you can choose from a curated range of label constructions designed to meet your specific performance and application requirements.

Engineered solutions
Develop custom products that differentiate your business and grow your bottom line. Take advantage and connect with the Engineered Solutions team, featuring some of the label and packaging industry's most experienced professionals. This team is dedicated to helping you be first to market with solutions meeting your clients' needs.

Glossary

Some definitions of typical terms used to describe adhesive technologies

Adhesive shear
A measure of the internal cohesive strength of the adhesive, i.e. how well it sticks to itself. Adhesive shear is an indication of how soft an adhesive is. A low-shear adhesive is soft, and has a greater tendency to ooze.

Peel adhesion
The force needed to make an adhesive bond fail. Avery Dennison uses FINAT Test Method No. 2 (FTM2) to test peel adhesion (90° angle).

Minimum application temperature
The lowest temperature recommended during the labeling process.

Emulsion
A type of acrylic polymer adhesive that is suspended in water.

Permanent
An adhesive designed to stick to a substrate without edge lifting. Permanent labels cannot be removed without damaging either the label or the substrate.

Dwell time
The time it takes for an adhesive to build ultimate adhesion to the substrate. Dwell time can vary from 2 to 24 hours depending on the conditions.

Ultimate adhesion
The maximum holding power that the label will achieve as the adhesive penetrates into the substrate. The time required to obtain ultimate adhesion (dwell time) may depend on the stiffness (shear) of the adhesive, the roughness of the substrate, and the temperature of the environment.

Hotmelt
A type of adhesive based on block copolymers (rubber, acrylic, or olefinic). Oils, plasticizers, and tackifiers are added to improve performance. UV-curing acrylic and rubber-based hotmelts are available.

Removable
An adhesive designed to be removable, yet stick to a substrate without edge lifting.

Mandrel hold
The ability to adhere to a curved or tight radius surface, providing resistance to “flag” or “wing up”.

Initial tack
The immediate holding power of the label upon contact with the substrate; also known as “initial grab” or “application tack”. Avery Dennison measures initial tack using FINAT Test Method No. 9 (FTM 9).

Service temperature
The recommended temperature for storing a label that has already been applied to a surface.

Solvent
A type of adhesive based on a solution of polymers in an organic solvent. The polymers can be acrylic-, rubber-, or silicone-based, or a hybrid.

Reclosure
A removable label designed for multiple open-close functionality.

Wet-out
The ability of the adhesive to conform to the surface to which it has been applied.

Who we are

As the pioneer in the pressure-sensitive industry, we bring one-of-a-kind capabilities to sustainable labelling. We combine decades of innovation with deep knowledge of both regulatory and legal requirements. We know about the real-world conditions in which our labels must perform and the technical challenges they have to meet. Whatever your product, wherever it's going, we can help you develop a sustainable label that performs.

What we stand for

Sustainability. Innovation. Quality. Service.

In 1935, we invented the first self-adhesive label, and we've never looked back. With each passing decade, our innovations have further shaped our industry by lifting the limits on what labels can do. The world's most successful brands know that innovation and evolution are the lifeblood of longevity and success. We're proud to help our clients continually expand the boundaries of what's possible.

Discover more possibilities

What else do you need? Let us know and we'll help you find or develop your desired labelling solution

Find more label solutions at
label.averydennison.com

#MakingPossible