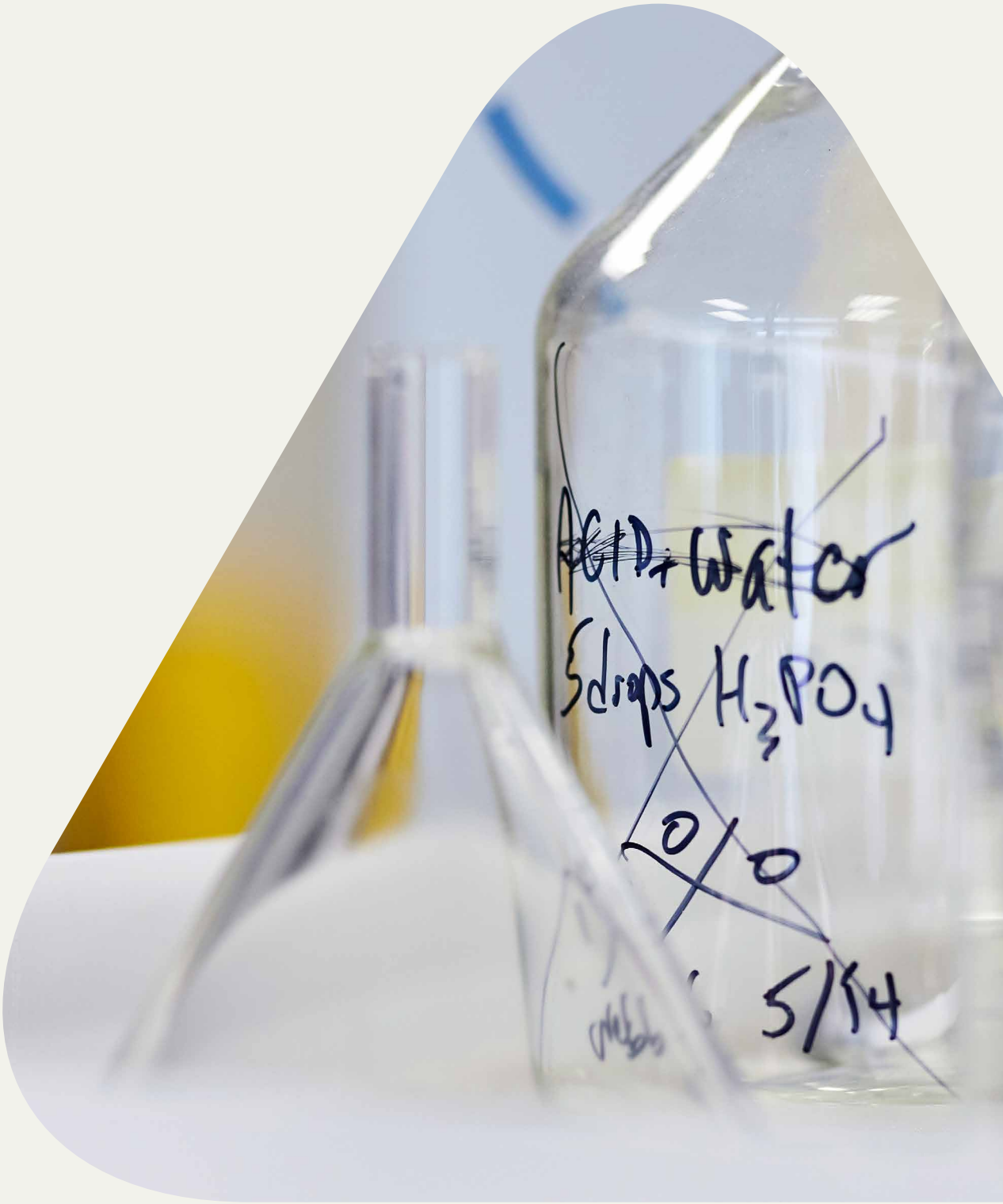
Adhesive Technologies

Labels + Packaging
Technical Guide
Europe
2020



AVERY DENNISON

Adhesives inspired by innovation

No one does innovation like Avery Dennison. For more than 85 years we've been developing new adhesives to meet the changing needs of the labelling and packaging industry. We're the only label producer making proprietary adhesives, and we're leading the development of sustainable, innovative and compliant solutions across all sectors.

With over 400 adhesive scientists working in seven R&D centers globally, we solve the challenges faced by our global customers in real time, offering bespoke adhesive performance to every corner of the world. Today, you'll find Avery Dennison adhesives everywhere you look.

Past, present and future

Material science is at our core. The world didn't have self-adhesive labels until we invented them. And we've been advancing quality and innovation in material science ever since.

1935: the first self-adhesive labels were developed by our founder Stan Avery.

1960s: we invented the first range of solvent rubber-based adhesives.

1970s: all-temperature emulsion acrylic brought a wide range of adhesive possibilities to the market.

1990s: our deep-freeze adhesives enabled labelling in sub-zero temperatures. Adhesives for rough, low-energy surfaces, such as tyres, were another of our pioneering inventions.

2000s: sustainability becomes a key focus for Avery Dennison and the entire label and packaging industry. We developed a wash-off adhesive to enable reuse for the returnable beverage market.

2010s: Avery Dennison further invests in sustainable solutions including CleanFlake™ adhesive technology, which enables the recycling of PET packaging.

Today: we're focused on increasing our portfolio with sustainable adhesives that support circularity, as well as specialized functional adhesives that enable labelling on challenging surfaces including automotive and low-temperature cryogenic applications.

AVERY DENNISON

LPM/EU/2020/June

Which adhesive is right for your application?

We make use of three adhesive coating technologies: emulsion, hotmelt, and solvent. Within each coating technology, we work with adhesive chemical compositions that are meticulously engineered to meet your application and performance demands. We have more than 160 specifically-tailored adhesive variants to choose from in Europe alone.

Adhesive coating technology:	Emulsion		Hotmelt		Solvent			
Adhesive chemical composition:	Acrylic	Rubber	Acrylic	Rubber	Acrylic	Rubber	Hybrid	Silicone

Three coating technologies allow us to engineer adhesives that offer a wide range of functionality within each type of chemical composition.

Our main adhesives are acrylic- and rubber-based, but we also develop hybrid and silicone adhesives for challenging applications specific to automotive. We are able to modify the adhesive composition so that the finished label behaves as you need it to.

Emulsion Acrylic
Suitable for high-speed conversion, emulsion acrylic adhesive is an excellent choice for food contact. We also have low-migration adhesives for pharmaceutical applications.

Emulsion Rubber
Emulsion rubber adhesives are often made from natural rubber thus requiring additives to stabilize their performance. In many cases this limits food approval compliance. Stability to UV light and ageing performance have to be evaluated depending on application requirements.

Hotmelt UV-Acrylic
These long-life adhesives suit applications for secure industrial, outdoor, and chemical containers. Hotmelt UV-acrylic adhesive has exceptional chemical resistance, and is heat resistant. It offers excellent performance across every metric.

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Hotmelt Rubber
With powerful adhesion and tack on the broadest range of surfaces, hotmelt rubber adhesive is a high-performing option for everything from cardboard to reusable coffee cups. It offers the best low-temperature performance and exceptional chemical resistance. It also adheres well on rough or contaminated surfaces.

Solvent Acrylic
High adhesion on a wide variety of substrates is one of the benefits of solvent acrylic adhesives. These adhesives offer exceptional water, heat, and chemical resistance, and are the preferred option for goods undergoing pasteurization or sterilization. They are superb for reclosure labels and tamper-evident applications.

Solvent Rubber
Powerful solvent rubber adhesives range from ultra-permanent to cleanly removable. They have high chemical and water resistance and are suitable for challenging surfaces.

Solvent Hybrid
These are the best performers on challenging, textured or contaminated surfaces – designed for harsh environments where exceptional adhesion, chemical and heat resistance are needed. Solvent hybrids combine the best of acrylic and rubber adhesives, with superior performance and good conversion.

Solvent Silicone
The adhesive of choice for difficult applications. Solvent silicone adhesives stick to silicone surfaces such as airbags in the automotive safety sector. They're very good performers on flexible substrates, like hoses and rubber pipes, and they answer the current market need for applications involving moulded products contaminated by release agents.

Benefit comparison

	Emulsion Acrylic	Hotmelt UV-Acrylic	Hotmelt Rubber	Solvent Acrylic	Solvent Rubber
Excellent tack and adhesion	●○○	●○○	●●●	●●○	●●●
Adhesion to a wide range of surfaces	●○○	●○○	●●●	●●○	●●●
Conversion (eg. die cutting, bleed)	●●●	●○○	●○○	●●○	●○○
Low temperature performance	●●○	●○○	●●●	●○○	●●○
Chemical resistance	●○○	●●●	●●○	●●●	●●○
Food and other approvals	●●●	●●○	●●○	●○○	n/a
Cost	●●●	●○○	●●○	●○○	●○○
Reclosures	●○○	●●○	●○○	●●●	●○○
Example adhesives	S692N S7000 S2000NG	R3200N S3100	S2045N C2075N	UVR145 MR980R S517N	R100 S451 S277

Key: ●○○ Fair ●●○ Good ●●● Excellent

How to choose the right adhesive

We have an adhesive for every application. Our emulsion, hotmelt, and solvent-based adhesives can be engineered to meet your application requirements.

Choosing the right adhesive begins with considering industry compliance regulations, functionality of the label or packaging, and preferably packaging design for recyclability.

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 products are sold.

Functionality
An adhesive is only complete when its functionality matches application needs. For instance, it may need to deliver clean removability, or convenience in retail/ home environments, or water-whitening resistance in wine and spirits applications (to retain a luxury look). In some applications, adhesive functionality must protect the integrity of the packaging, acting as a security solution by showing if the packaging has been tampered with. Other examples include a wide variety of resealable adhesives, giving the best reclosure label performance on flexible product packaging. This includes personal or household care wet wipes, where our reclosure labels keep oxygen out of the pack but retain moisture, and also food packaging where the label prevents spillages and keeps contents in the pack.

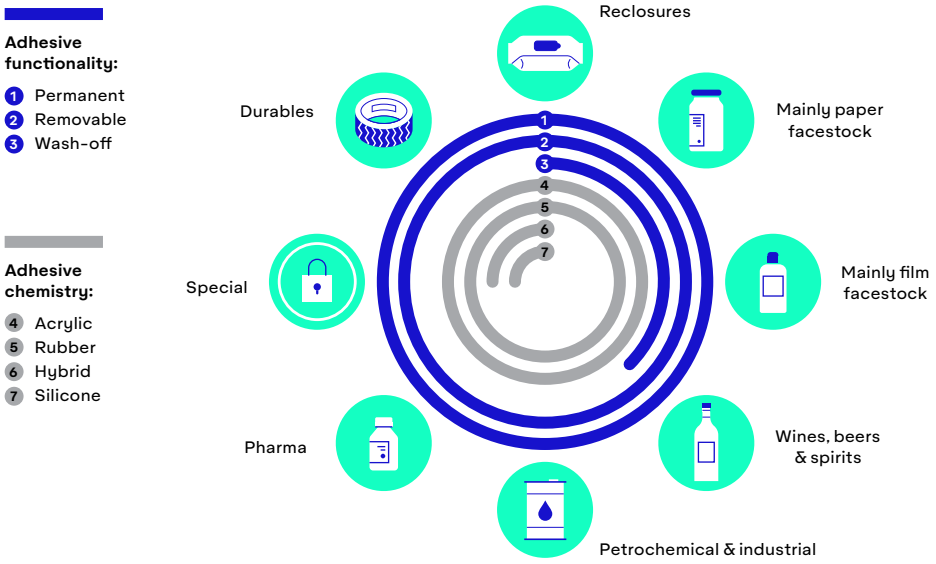
Sustainability
Sustainability is a focus not only for brand owners but across the whole industry. It's our mission to lead the shift towards a circular economy, by developing sustainable labelling solutions. We are continuing to develop an adhesives portfolio that meets recycling guidelines and standards even better than before.

Choices range from adhesives that remove cleanly from packaging in the recycling process, through to an adhesive that is permanent and doesn't remove at all (enabling reuse of durable, reusable packaging). We are also continuing our development work around compostable label solutions. No matter what your goals are, we will find an adhesive solution that enables your sustainability vision.

How to choose the right adhesive

Application
When we design an adhesive we start with the application in mind. With dedicated teams for different applications we follow closely the needs and requirements for adhesives, for instance in pharma or durable applications. These insights help us to propose adhesives when the application field is known.

Facestock
Adhesive choice is often also influenced by the label facestock. Our adhesives are tailored to the facestock material. We have a wide range of ready-made adhesives, for labelling materials that range from sustainably-sourced or recycled-content paper and film facestocks through to highly durable long-lasting filmic materials.



Application surface
Not all application surfaces are the same, even if they look similar to the naked eye. Surface polarity influences the level of anchorage between the adhesive and the application surface.

Polar surfaces such as PET and glass have a High Surface Energy (HSE), so are easier to stick to. Apolar surfaces such as PVC and HDPE have Low Surface Energy (LSE), so adhesives don't stick as easily and are more challenging. We offer an adhesive portfolio designed to match the polarity profile of every surface type, and our team of adhesive experts is always on hand to help you find the right match for your own application.

Easy ← → Challenging

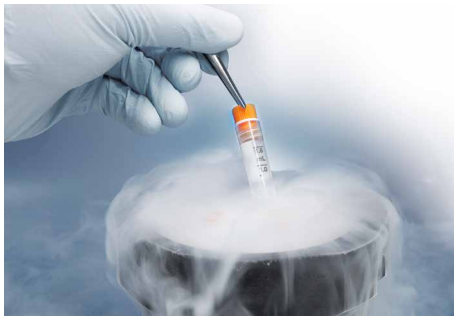
Smooth	Slightly rough	Rough	Heavy rough or contaminated	Extremely difficult
• **Polar** Gloss (glass, PET, metal, stainless steel) • **Apolar** Gloss plastics (PP, PE)	• **Polar** Matt (glass, metal, stainless steel, PET) • **Apolar** Matt plastics (PVC, crates, HDPE, PP)	• Coated cards, non-silicone varnished • Uncoated cards, textile, matt varnished, cardboard • Planed wood, fiberboard, chemical drum (PE)	• Tyres, wood, carpets, concrete, stone, pallets • Dusty and oil contaminated surfaces	• Silicone rubber, hot metal, airbags

How to choose the right adhesive

Temperature

Application temperature and service temperature both need to be considered to ensure that labels adhere during application, and also that they remain in place throughout the product life cycle.

Most of our adhesives are designed for ambient conditions, with a minimum application temperature of +5°C. Once in service, our regular adhesives can survive service temperatures between -40°C to +80°C. Note that label printers and brand owners can greatly extend that application range by using pressure-sensitive label adhesives that go beyond the scope of regular service temperatures:



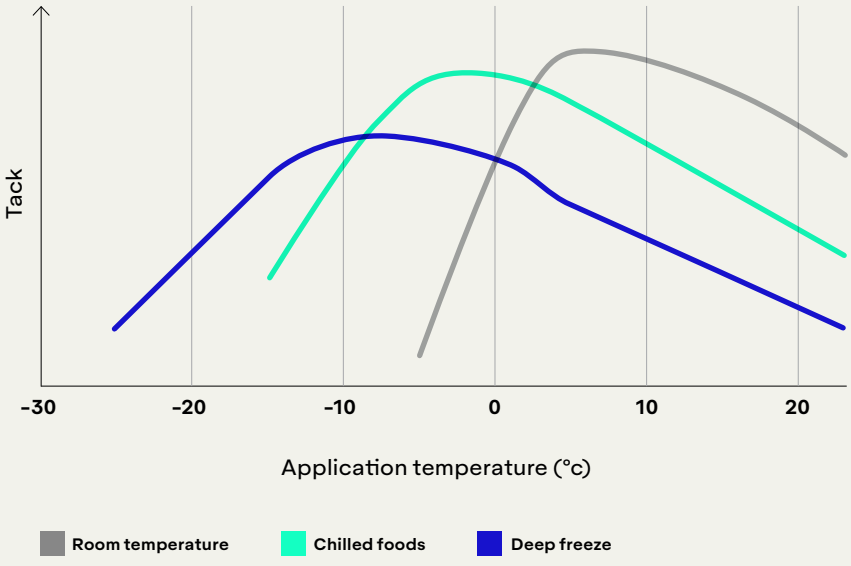
Cold chain for cryogenics

Our cold chain adhesive is the first of its kind, withstanding a service temperature as low as -196°C. It copes with temperatures that are crucial for cutting-edge medical applications such as vaccines, stem cells, clinical trials, and bio-banking.

S8093 for extreme heat

Our specially-engineered adhesives can cope with extreme heat. S8093 adhesive resists short-term temperatures up to +220°C, making it an excellent choice for the metal industry.

Effect of application temperature on tack



Every adhesive has its own optimum application temperature window. A removable adhesive at room temperature is actually permanent at low temperature!

Cold temperature selection guide

Application	Adhesive	Coating Technology	Adhesive behaviour during labelling, as affected by temperature: 4°C	-5°C	-10°C	-15°C	-20°C
General (in combination with paper labels)	S2550	Emulsion acrylic	●●●○○	●○○○○			
	S2045N	Rubber-based hotmelt	●●●●○	●●○○○	●○○○○		
	S2060N	Rubber-based hotmelt	●●●●●	●●○○○	●○○○○		
	S2800	Emulsion acrylic	●●○○○	●●○○○	●●○○○	●○○○○	
	S2065N	Rubber-based hotmelt	●●●●○	●●○○○	●○○○○		
	C2040	Emulsion acrylic	●●●○○	●●●○○	●●●○○	●●○○○	●○○○○
	C2075N	Rubber-based hotmelt	●●●●○	●●●○○	●●●○○	●●●○○	●●○○○
General (in combination with film labels)	S2800	Emulsion acrylic	●●○○○	●●○○○	●●○○○	●○○○○	
	S2045N	Rubber-based hotmelt	●●●●○	●●○○○	●○○○○		
	C2075N	Rubber-based hotmelt	●●●●○	●●●○○	●●●○○	●●●○○	●●○○○
Wine, spirits & beverage	S2047N	Rubber-based hotmelt	●●●●○	●○○○○			
Petrochemical & industrial	D170N	Rubber-based hotmelt	●●●●●	●●○○○			
	S2085	Rubber-based hotmelt	●●●●○	●●○○○	●○○○○		
Pharma*	S2045NP	Rubber-based hotmelt	●●●●●	●●○○○	●○○○○		
	S2060NP	Rubber-based hotmelt	●●●○○	●●○○○	●○○○○		
	C2020P	Emulsion acrylic	●●●●●	●●○○○			
	S451	Rubber-based solvent	●●●●●	●●●●○	●●○○○	●○○○○	
Very rough surface labelling	F1	Rubber-based hotmelt	●●●●●	●●○○○			
	TS8000	Rubber-based hotmelt	●●●●●	●●○○○			
	TS79	Rubber-based hotmelt					

Key: ●○○○○ Acceptable ●●●●● Best at these specific minimum application temperatures

*Pharma cryogenic adhesives are designed for labelling at room temperature, with subsequent storage at -196°C

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

Core Adhesive Portfolio

General applications – Paper & VI					Service temp.		Food approval	
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Lower end (°C)	Higher end (°C)	Direct food contact	Fatty food contact
TrueCut™ S2000NG	Emulsion acrylic	Permanent	Adhesive with high initial tack, excellent adhesion and good low temperature performance on a wide variety of substrates.	5	-20	80	✓	✓
TrueCut™ S2550	Emulsion acrylic	Permanent	Adhesive with an increased initial tack, excellent adhesion and good low temperature performance on a wide variety of substrates.	0	-20	80	✓	✓
TrueCut™ S2046	Emulsion acrylic	Permanent	Adhesive with a very high initial tack, excellent adhesion and good low temperature performance on a wide variety of substrates.	3	-20	80	✓	✓
S2000N	Emulsion acrylic	Permanent	Adhesive with high initial tack, excellent adhesion and good low temperature performance on a wide variety of surfaces.	0	-20	80	✓	✓
S2025N	Hotmelt rubber	Permanent	Adhesive with excellent tack and adhesion on a wide variety of surfaces, including apolar, slightly rough and curved. This adhesive is designed specifically for application at room temperature onto cardboard surfaces.	5	-40	70	✓	
S2045N	Hotmelt rubber	Permanent	A high-tack adhesive for smooth to slightly rough surfaces and good performance at lower temperatures.	0	-40	70	✓	
S2065N	Hotmelt rubber	Permanent	Adhesive with excellent wettability and adhesion to polar and apolar surfaces. Designed for automatic label dispensing, in particular for air blowing dispensing systems at cool temperatures down to 0°C.	-5	-5	70	✓	
S2060N	Hotmelt rubber	Permanent	Adhesive with excellent tack and adhesion on smooth and slightly rough polar and apolar surfaces including cardboard. Very good performance at lower temperatures.	0	-40	70	✓	
S445N	Hotmelt rubber	Permanent	Highly aggressive adhesive suitable for use on difficult and rough surfaces, such as rubber goods, fibre drums and plastic containers, excellent performance at low temperature.	-5	-40	70	✓	
R5000N	Emulsion acrylic	Removable	Good tack and adhesion, as well as clean removability across a broad spectrum of applications. Offered in combination with film and paper facestock.	-15	-30	80	✓	✓
S2012HT	Emulsion acrylic	Permanent	Adhesive with good tack and adhesion performance on a wide range of surfaces, even at low temperatures. Very low bleeding characteristics for optimal use in hot laser and copier machines.	0	-20	80	✓	✓
S2012HTC	Emulsion acrylic	Permanent	Adhesive with high initial tack and adhesion on a wide range of surfaces including cardboard. Very low bleeding characteristics for optimal use in hot laser and copier machines.	0	-20	80	✓	✓
LR2N	Emulsion acrylic	Removable	Good tack and adhesion in combination with clean removability across a broad spectrum of applications. The adhesive is designed for optimal use in laserprinters and copier machines.	-15	-30	80	✓	
S2800	Emulsion acrylic	Permanent	High adhesion in both ambient and heavily chilled conditions, suitable for direct food applications. Excellent application performance on a wide range of surfaces.	-15	-50	120	✓	✓
C2040	Emulsion acrylic	Permanent	Good adhesion at low temperatures and freezer conditions, good tack and adhesion to a wide variety of surfaces such as cardboard, plastic films, HDPE, PP and PET.	-15	-50	80	✓	✓

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General applications – Paper & VI (continued)

Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Service temp. Lower end (°C)	Service temp. Higher end (°C)	Food approval Direct food contact	Food approval Fatty food contact
C2075N	Hotmelt rubber	Deep freeze	Good tack and adhesion across a broad spectrum of applications at low temperatures and freezer conditions.	-25	-50	70	✓	
WX6030	Emulsion acrylic	Wash-off	Permanent wash-off adhesive used in combination with paper facestock.Typically used in applications like work in process and Ship & Track, e.g. labelling of plastic crates.	5	-20	80	✓	
S2660	Emulsion acrylic	Permanent	Adhesive with high initial tack, good adhesion on polar and apolar surfaces and good mandrel performance. Recommended for difficult label shapes and high speed conversion.	0	-20	80		

General applications – Film

Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Service temp. Lower end (°C)	Service temp. Higher end (°C)	Food approval Direct food contact	Food approval Fatty food contact
S692N	Emulsion acrylic	Permanent	A clear general purpose adhesive for smooth to slight rough surfaces.	5	-20	80	✓	✓
ClearCut™ S7000	Emulsion acrylic	Permanent	A clear general purpose adhesive for smooth to slightly rough surfaces enabling high speed converting and dispensing with thin filmic facestocks.	5	-20	80	✓	✓
S4000N	Emulsion acrylic	Permanent	An ultra-clear adhesive for smooth polar surfaces, excellent wet-out with PET liners (no-label look).	10	-20	100	✓	✓
S4700	Emulsion acrylic	Permanent	A high-tack adhesive with excellent adhesion and wet-out performance even for rough surfaces such as HDPE and for applying large labels.	0	-20	80	✓	✓
S2045N	Hotmelt rubber	Permanent	A high-tack adhesive for smooth to slightly rough surfaces and good performance at lower temperatures.	0	-40	70	✓	
CleanFlake™ SR3011	Emulsion acrylic	Wash-off (enables recycling)	A clear adhesive enabling PET bottle recycling. Adhesive is deactivated during the PET recycling process, allowing the facestock, ink and adhesive to cleanly separate from the PET flakes.	5	-20	60	✓	✓
C2075N	Hotmelt rubber	Deep freeze	Good tack and adhesion across a broad spectrum of applications at low temperatures and freezer conditions.	-25	-50	70	✓	
S2800	Emulsion acrylic	Permanent	High adhesion in both ambient and heavily chilled conditions, suitable for direct food applications. Excellent application performance on a wide range of surfaces.	-15	-50	120	✓	✓

Beer & beverage

					Service temp.		Food approval	
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Lower end (°C)	Higher end (°C)	Direct food contact	Fatty food contact
S517N	Solvent acrylic	Permanent	An ultra clear adhesive, high adhesion on glass bottles, withstand temperature extremes (pasteurization) and offers excellent water-whitening resistance.	10	-40	115		
S7400	Emulsion acrylic	Permanent	A clear adhesive for prime beer label applications, enabling high speed converting and dispensing with thin filmic facestocks.	5	-20	80	✓	
MultiCycle™ M7500	Solvent acrylic	Permanent	An ultra permanent clear adhesive for labelling of returnable bottles or water-gallons that withstands up to 30 product life-cycles, including the high temperature caustic baths in the washing process.	5	-20	90		
S6000	Emulsion acrylic	Wash-off	Adhesive for returnable glass bottles, facilitating easy label removal in conventional bottle washer. Features excellent wet-out, clarity and water-whitening resistance.	5	-20	70		
W7600	Emulsion acrylic	Wash-off	Adhesive for returnable glass bottles, facilitating easy label removal in conventional bottle washer.	5	-20	60	✓	✓
GRX1	Emulsion acrylic	Wash-off	A clear adhesive for labelling of one-way glass bottles, facilitating clean separation of self-adhesive label from glass particles (cullet) enabling clean glass recycling process.	5	-20	60	✓	✓

Wine & spirits

					Service temp.		Food approval	
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Lower end (°C)	Higher end (°C)	Direct food contact	Fatty food contact
S2030	Emulsion acrylic	Permanent	Adhesive for difficult label shapes and high speed conversion, excellent die-cutting and stripping properties and very good mandrel performance.	5	-20	80	✓	✓
S2047N	Rubber hotmelt	Permanent	Adhesive with high tack and adhesion on difficult bottle surfaces, good performance at lower temperatures and an excellent ice bucket resistance.	5	-30	70	✓	
WLA	Emulsion acrylic	Wash-off	Adhesive for labelling of returnable wine and spirits glass bottles, allows paper labels to be easily washed off in a hot alkaline solution.	10	-20	80		
WW2031	Emulsion acrylic	Wash-off	Permanent wash-off adhesive, available in combination with decorative paper facestocks for wine bottle labelling. Wash-off temperature – min. 21°C, optimal at 60°C. No additives needed.	5	-20	80	✓	
S700	Solvent acrylic	Permanent	High-tack adhesive with good adhesion on a variety of surfaces, including apolar and rough, suitable for small diameter labels.	5	-40	90		
Z1010	Emulsion acrylic	Permanent	Adhesive using the Aqua Opaque™ technology reducing the loss of opacity in wet conditions. Provides excellent diecutting and stripping properties and enables high speed conversion.	5	-20	60		

Compostable

Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Service temp. Lower end (°C)	Service temp. Higher end (°C)	Food approval Direct food contact	Food approval Fatty food contact
S9500	Emulsion acrylic	Permanent	Certified compostable adhesive, good initial tack and adhesion on a wide variety of surfaces.	5	-20	80	✓	
SX6030	Emulsion acrylic	Permanent	Adhesive supporting compostability, featuring good initial tack and adhesion on a wide variety of surfaces. Certified OK Compost in combinations with specific facestocks.	5	-15	50	✓	✓

Security

Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Service temp. Lower end (°C)	Service temp. Higher end (°C)	Food approval Direct food contact	Food approval Fatty food contact
S700	Solvent acrylic	Permanent	Adhesive for security labelling, e.g. traditional and dry VOID labels, box-tear. Very high adhesion and tack, especially on rough surfaces, good chemical, heat and humidity resistance.	5	-40	90		
S697	Solvent acrylic	Permanent	Adhesive for use in security seal applications in cosmetics, electronics and pharmaceutical industry. High adhesion and tack on variety of surfaces, good chemical, heat and UV resistance.	5	-40	90	✓	

Reclosure & removables					Service temp.		Food approval	
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Lower end (°C)	Higher end (°C)	Direct food contact	Fatty food contact
MR980R	Solvent acrylic	Reclosure	Adhesive with the highest resistance to solvents used in more demanding household wet wipes app lications. Exhibits excellent clarity, UV resistance, clean removability and a smooth peel from PET, PE and PP surfaces.	-20	-40	80		
UVR145	Solvent acrylic	Reclosure	Adhesive with very good moisture and solvent resistance for personal care, cosmetics & baby wet wipes reclosure applications. Exhibits excellent clarity and UV resistance, clean removability and a smooth peel from PET, PE and PP surfaces.	5	-20	80	✓	
R1490M	Solvent acrylic	Reclosure	Adhesive with moisture and solvent resistance for personal care, cosmetics & baby wet wipes reclosure applications. Adhesive exhibiting excellent UV resistance, clean removability and a smooth peel from PE and PP surfaces.	5	-20	80	✓	
R3200N	Hotmelt UV acrylic	Reclosure	Semi-permanent adhesive for cosmetic wipes applications featuring excellent clarity, durability, chemical and UV resistance. Suitable for low-surface energy surfaces like PE, PP.	5	-20	80	✓	
R5050	Emulsion acrylic	Reclosure	Adhesive with superior and clean removability for reclosure lablling solutions for food packaging incl. applications involving direct labeling of moist and fatty foodstuffs and deep freeze applications.	-15	-25	70	✓	✓
C3	Emulsion acrylic	Removable	A clear, UV resistant adhesive featuring high ageing stability for removable labels, e.g. for industrial and cosmetics applications. Offered in combination with film facestock.	0	-40	100	✓	
C3NF	Emulsion acrylic	Removable	Adhesive featuring high ageing stability for removable labels and a very good performance on smooth & flat surfaces such as uncoated (window) glass. Offered in combination with film facestock.	0	-40	100	✓	
UR400	Solvent rubber	Ultra Removable	Adhesive with ultra-low peel, ideal for book labels and large, short-term labels where highest level of removability/easy peel is required. Offered in combination with paper facestock.	5	-20	80		
UR500	Solvent rubber	Ultra Removable	Adhesive suitable for ultra-removable labels especially if there is a requirement for automatic dispensing onto a product. Offered in combination with paper facestock.	-20	-40	80		
R100	Solvent rubber	Removable	A superior, smooth peel removable adhesive for paper labels, suitable for many surfaces such as PET, PP, greeting cards, stainless steel and glass. Good initial tack and superb low temperature performance.	-20	-40	80	✓	
R5000N	Emulsion acrylic	Removable	Good tack and adhesion, as well as clean removability across a broad spectrum of app-lications. Offered in combination with film and paper facestock.	-15	-30	80	✓	✓
R5000N HT	Emulsion acrylic	Removable	High tack and adhesion in combination with excellent and clean removability from most surfaces; polymeric (e.g. PET, PP, ABS), card and fibre board, aluminium, stainless steel or glass.	-15	-30	80	✓	✓
R5100	Hotmelt rubber	Removable	A semi-permanent adhesive, widely used for repositionability purpose, e.g. on wine bottles. Offered in combination with paper facestock.	-20	-40	70	✓	

Automotive, electronics & industrial					Service temp.		Food approval	
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Lower end (°C)	Higher end (°C)	Direct food contact	Fatty food contact
S277	Solvent rubber	Permanent	Highly aggressive permanent adhesive with excellent tack and adhesion to a wide variety of surfaces including rough and apolar, e.g. freshly moulded HDPE bottles.	5	-20	80		
S445N	Hotmelt rubber	Permanent	Highly aggressive adhesive suitable for use on difficult and rough surfaces, such as rubber goods, fibre drums and plastic containers, excellent performance at low temperature.	-5	-40	70	✓	
S477	Emulsion acrylic	Permanent	Clear adhesive for oil can applications, featuring excellent initial tack, adhesion, wet-out performance even on apolar surfaces such as HDPE. Improved temperature water, solvent and chemical resistance.	0	-20	80	✓	✓
S8002	Emulsion acrylic	Permanent	Adhesive with high adhesion to a wide range of polar and apolar surfaces, good initial tack and chemical resistance. S8002 is suitable for labelling electronic home appliances and curved surfaces.	5	-40	150		
S8020	Emulsion acrylic	Permanent	Clear adhesive with good adhesion performance on polar and apolar surfaces, excellent temperature and UV resistance.	5	-40	150		
S8007	Emulsion acrylic	Permanent	Adhesive for labelling of durable goods, good heat and UV resistance and good adhesion on polar smooth surfaces like metal, ABS, Polystyrene, Polycarbonate and Nylon.	5	-40	150		
AL170	Solvent acrylic	Permanent	Strong adhesive for polar surfaces (metals) with very high ageing stability and excellent chemicals and heat resistance. Adhesive for cable labels or over-laminating purposes in automotive industry.	0	-40	150		
S8015	Solvent acrylic	Permanent	High strength adhesive, high initial tack, adhesion and shear and high chemical and temperature resistance. Offers strong permanent bonding to difficult surfaces, such as apolar plastics and coatings used in automotive industry	7	-40	150		
S8030	Solvent acrylic	Permanent	All-round performing high strenght adhesive, good adhesion to polar and apolar surfaces, long term durability and good chemical resistance.	7	-40	150		
S8035	Hotmelt UV Acrylic	Permanent	High-tack adhesive for apolar and rough surfaces, superior cohesion and good chemical and temperature resistance.	5	-40	150		
S8029	Rubber hybridised adhesive (RHA)	Permanent	Universal Rubber Hybridised Adhesive (RHA) with high adhesion on wide variety of surfaces including textured and apolar. Features high chemical and temperature resistance.	5	-40	150		
S8049	Rubber hybridised adhesive (RHA)	Permanent	Rubber Hybridised Adhesive (RHA) with extremely high adhesion on wide variety of surfaces including textured and apolar. Features high chemical and temperature resistance.	5	-40	150		
S8092	Silicone	Permanent	Silicone adhesive suitable for applications on surfaces contaminaded by silicone. Widely used in automotive safety systems (airbags, hoses, moulded parts etc.)	5	-80	150		
S8072	Solvent acrylic	Structural Bond	Structual bond adhesive, remains removable until it is pressed and heat activated to reach structural bond on various surfaces.	10	-40	80		
S3100	Hotmelt UV acrylic	Permanent	Adhesive with very high tack and adhesion to a wide variety of surfaces including apolar.	5	-20	120	✓	

Tyres

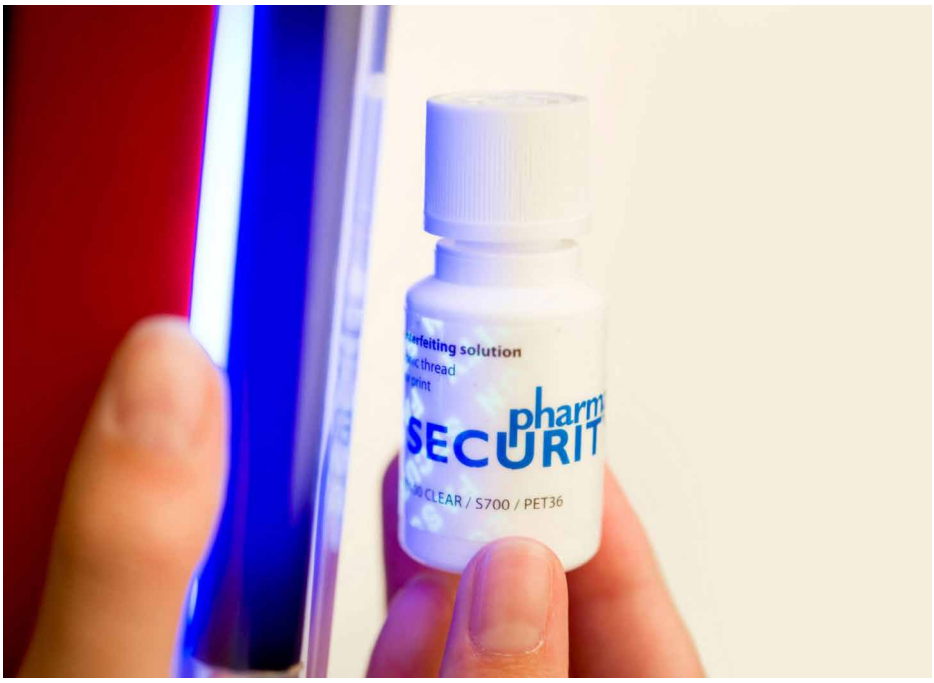
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Service temp. Lower end (°C)	Service temp. Higher end (°C)	Food approval Direct food contact	Food approval Fatty food contact
TS8000	Hotmelt rubber	Permanent	Adhesive with superb anchorage to curved and extremely irregular surface of tyres, not affected by contaminants such as mould release agents or components migrating from the rubber. Offered in combination with film facestock.	0	-20	70		
TS79	Hotmelt rubber	Permanent	Adhesive with superb anchorage to curved and extremely irregular surface of tyres, not affected by contaminants such as mould release agents or components migrating from the rubber. Offered in combination with paper facestock.	0	-20	70		
TS8005	Hotmelt rubber	Permanent	Adhesive with superb anchorage to curved and extremely irregular surface of tyres, not affected by contaminants such as mould release agents or components migrating from the rubber. Offered in combination with paper VI facestock.	0	-20	70		
F1	Hotmelt rubber	Permanent	Adhesive for difficult rough, uneven and absorbing surfaces, e.g. tyres, wooden crates, jute sacks. F1 is an extremely soft adhesive with a tendency to flow.	0	-40	50		
TS8018	Solvent rubber	Permanent	Adhesive developed for the tyre manufacturing process, to be used in the vulcanization process on a variety of green tyres, providing extremely high final adhesion levels.	5	-40	80		

Pharmaceutical

Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Service temp. Lower end (°C)	Service temp. Higher end (°C)	Food approval Direct food contact	Food approval Fatty food contact
S2000NP	Emulsion acrylic	Permanent	High-tack and good adhesion on glass, PE, PP and cardboard. Developed for applications on cylindrical containers, e.g. pill bottles. Adhesive suitable for autoclave, gamma and ETO sterilisation.	0	-20	80	✓	✓
S692NP	Emulsion acrylic	Permanent /low migration	A clear adhesive with lowest risk for migration, excellent UV resistance, good adhesion on polar and apolar surfaces. Adhesive for applications on small cylindrical containers, curved surfaces and suitable for use in labels to applied on high speed production lines. Can be sterilised in autoclave, gamma and ETO.	5	-20	80	✓	✓
S4000N LUM	Emulsion acrylic	Permanent	An ultra-clear, luminescent adhesive for use with clear filmic face and liner materials (no-label look), enabling the detection of mising labels (after dispensing) with UV light. The adhesive features excellent water and heat resistance.	10	-20	100		
S2045NP	Hotmelt rubber	Permanent	Excellent tack and adhesion on a wide variety of surfaces, including slightly rough and curved. Particularly good performance at lower temperatures. Limited mandrel performance around 10 mm.	0	-40	70	✓	
S451	Solvent rubber	Permanent	Excellent tack and adhesion on a wide range of surfaces at temperatures down to - 5°C. Adhesive suitable for autoclave, gamma and ETO sterilisation.	-5	-40	80		
S697	Solvent acrylic	Permanent	Adhesive with high shear, chemical, heat and UV resistance. Suitable for glass syringes, high speed dispensing and hang labels.	5	-40	90	✓	
S697 LUM	Solvent acrylic	Permanent	A clear luminescent adhesive – enabling the detection of missing labels with U.V. light. Suitable for small diameter applications as glass vials and syringes. Good resistance to solvents.	5	-40	90		

Continued on next page →

Pharmaceutical (continued)					**Service temp.**		**Food approval**	
Adhesive	Technology	Type	Description	Minimum application temp. (°C)	Lower end (°C)	Higher end (°C)	Direct food contact	Fatty food contact
S700	Solvent acrylic	Permanent	Adhesive recommended for apolar surfaces, small diameter and hang labels where high tack is critical. Adhesive with good chemical, heat and humidity resistance.	5	-40	90		
S717P	Emulsion acrylic	Permanent	A special adhesive with excellent mandrel holding power on very small diameter containers like syringes and ampules. Adhesive suitable for autoclave, gamma and ETO sterilisation.	10	-50	121	✓	✓
S799P	Solvent acrylic	Permanent	Adhesive designed to provide tamper evident feature, faciliate fiber tear on different cardboard boxes used in the pharmaceutical industry.	10	-60	130	✓	
C2020P	Emulsion acrylic	Permanent	High initial tack and excellent adhesion at low temperatures, especially for applications between -20° C to 0° C. Adhesive suitable for secondary blood bag labelling in hospitals and blood/plasma collection centers.	-20	-50	80	✓	✓
C2050P	Solvent acrylic	Cryogenic	High performance adhesive at deep-freeze and demanding conditions, such as dry ice. Because of the very low application temperature -50° C, adhesive is recommended for labeling laboratory tubes, steel, glass and PP plates during clinical trials.	-50	-196	120		
AL171	Solvent acrylic	Permanent	Adhesive with extremely high ageing stability for long-term applications, excellent cold, heat and solvent resistance, suitable for autoclave and gamma sterilization process. Recommended for blood bag/plasma applications.	10	-80	140		
S2196	Solvent acrylic	Cryogenic	Adhesive with high performance at cryogenic storage conditions when labelling takes place in ambient temperatures. Recommended for labeling laboratory tubes, steel, glass and PP plates for tissue collection.	10	-196	120	✓	



Glossary

Apolar surface
A material with Low Surface Energy (LSE) – difficult to adhere to.

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.

Emulsion
Acrylic polymer adhesive that is suspended in water.

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

Initial tack
The immediate holding power of the label upon contact with the substrate – "initial grab" or "application tack". Avery Dennison measures initial tack using FINAT Test Method No. 9 (FTM).

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

Minimum application temperature
The lowest temperature recommended during labelling.

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

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

Polar surface
A material with High Surface Energy (HSE) – easy to adhere to, with good wet-out.

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

Removable
An adhesive designed to stick to a substrate without edge lifting. Can be removed without damage to either the label or the substrate.

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

Shear resistance
A measure of the internal cohesive strength of the adhesive – 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 flow.

Solvent
A solution of polymers in an organic solvent. Polymers can be acrylics, rubber or silicone based, or a hybrid.

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.

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

Let's connect

We're here to answer your questions and help you choose the right material for your needs. Contact your usual sales representative, or visit label.averydennison.com.

For more information on technical performance and printing recommendations, please refer to the respective datasheets. Please note that the Avery Dennison product range and service offering can be subject to changes. For an accurate overview, please check our website label.averydennison.eu or contact your local Avery Dennison sales representative.

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