

NovaCryl™ PS-P 180 Permanent Pressure Sensitive Adhesive

Description

NovaCryl PS-P 180 water-based acrylic polymer is designed for excellent water and humidity resistance. It delivers the following benefits in pressure sensitive adhesive applications:

- Improved water whitening resistance in clear film label applications
- Excellent adhesion on polyolefin surfaces
- High finger tack
- Good clarity and non-yellowing characteristics
- Good UV stability
- Good balance of peel, tack and shear resistance
- Free of Alkyl Phenol Ethoxylate (APE) type surfactants

Typical Dispersion Properties

Property	Typical Value
% Solids	47 - 49
pH	6.5 - 7.5
Viscosity at 23°C (Brookfield, LTV Spindle #3, 30 RPM)	100 - 500 cps
Average Particle Size	140 - 200 nm
Ionic Character	Anionic
Surface Tension	43 dynes/cm
Glass Transition Temperature (T _g) Calculated	-50°C
Mechanical Stability	Excellent

Typical Adhesive Performance*

Adhesion Test	Type	Failure Mode	Performance		
			(oz/in)	(lb/in)	(N/25 mm)
180° peel on Stainless Steel (SS)	30 min.	A/C	75.2	4.7	20.9
	24 hr.	C	81.6	5.1	22.7
180° peel on HDPE	30 min.	A	14.4	0.9	4.0
	24 hr.	A	24.0	1.5	5.8
Loop Tack on SS	1" x 1"	A	48.0	3.0	13.4
Loop Tack on HDPE	1" x 1"	A	20.8	1.3	5.8
Shear (30 min dwell)	1/2" x 1/2" x 500g	C	> 6 hrs	> 6 hrs	> 6 hrs

Failure Mode: A = Adhesive, C = Cohesive

*All adhesion properties were evaluated on direct-coated 2 mil polyester facestock at 0.9 mil dry coat weight. PSTC 101 for peel adhesion, PSTC 16 for loop tack, and PSTC 107 for shear testing.

Application Areas

- Clear film label and graphic applications
- Low temperature labels (-20°C)
- Over laminates and protective films

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NovaCryl PS-P 180 is designed to be used in wet, humid conditions. It displays excellent humidity and water resistance.

Performance in Humidity (35°C/95% RH) and Water Immersion Test*

Humidity Test	Type	Failure Mode	Performance		
			(oz/in)	(lb/in)	(N/25 mm)
180° peel on SS	24 hr.	C	70.4	4.4	19.6
	7 days	C	78.4	4.9	21.8
180° peel on HDPE	24 hr.	A	22.4	1.4	6.2
	7 days	A	43.2	2.7	12.0

Water Immersion Test	Type	Failure Mode	Performance		
			(oz/in)	(lb/in)	(N/25 mm)
180° peel on SS	30 min.	A	44.8	2.8	12.5
	24 hr.	C	62.4	3.9	17.4
180° peel on HDPE	30 min.	A	12.8	0.8	3.6
	24 hr.	A	22.4	1.4	6.2

Failure Mode: A = Adhesive, C = Cohesive

*All adhesion properties were evaluated on direct-coated 2 mil polyester facestock at 0.9 mil dry coat weight. PSTC 101 for peel adhesion.

Tackifier Response of NovaCryl PS-P 180 on Various Substrates*

NovaCryl PS-P 180 offers very good finger tack and adhesion. Enhancement of these properties may be achieved with a variety of tackifiers in the form of dispersions. NovaCryl PS-P 180 is compatible with hydrocarbon, rosin ester, hydrogenated rosin ester tackifiers, and their blends. The desired tackifier level varies depends on the tackifier and the application involved. It is therefore recommended to test the compatibility and desired results of a formulated system.

Below are examples of tackifier response with two commercially available tackifiers on the market today.

Adhesion Test	Failure Mode	NovaCryl PS-P 180	NovaCryl PS-P 180 + Tacolyn™ 1070			NovaCryl PS-P 180 + Snowtack™ 880G		
			85/15	80/20	75/25	85/15	80/20	75/25
180° Peel, 24 hr. (lb/in)								
Stainless Steel	C	5.1	5.0	4.9	4.8	5.1	5.2	4.9
HDPE	A	1.7	2.1	2.6	3.0	2.1	1.8	2.2
Corrugated Cardboard	C/T	2.4	2.3	2.7	2.2	2.6	2.8	2.6
Loop Tack (1" x 1") (lb/in)								
Stainless Steel	A	2.7	3.7	3.9	4.2	3.3	3.6	3.7
HDPE	A	1.6	2.0	1.7	1.7	2.2	2.6	2.2
Corrugated Cardboard	A	2.1	2.4	2.2	2.0	2.3	2.5	2.1
Shear SS (min.)								
1/2" x 1/2" x 500g	C	>360	440	280	290	150	70	90

Failure Mode: A = Adhesive, C = Cohesive, T = Transfer

*All adhesion properties were evaluated on direct-coated 2 mil polyester facestock at 0.9 mil dry coat weight. PSTC 101 for peel adhesion, PSTC 16 for loop tack, and PSTC 107 for shear testing.

*TACOLYN is a trademark of Eastman Chemical Company. SNOWTACK is a trademark of Hexion Specialty Chemicals.

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Formulation and Compatibility

NovaCryl PS-P 180 can be used alone or formulated for a specific application or coating line configuration. It is compatible with many wetting agents, defoamers, and rheology modifiers. To enhance adhesion performance, 5 – 35% (by wt.) tackifier can be added. **NovaCryl PS-P 180** is compatible with hydrocarbon, rosin ester, and hydrogenated rosin ester tackifiers, and their blends. For low temperature tack and adhesion performance improvement, 1 – 15% (by wt.) phthalate or benzoate type plasticizer can be included in the formulation. Preliminary trials should be conducted to determine the effective range of each component.

Storage, Handling and Packaging

- Protect emulsion from freezing – ideal storage temperature is 70°F (22°C)
- Shelf life of one (1) year when properly stored
- Refer to MSDS for additional details
- Packaging options – Tank truck, 2200 lb. tote, 480 lb. fiber drum, 460 lb. plastic drum
- Coater-ready grades are available upon request

NOTE:

Although the data supplied above is believed to be accurate, each user is advised to make an independent determination as to whether the described product(s) is/are appropriate for a particular use or application, whether such use will comply with all applicable laws or regulations, or whether such use will infringe the intellectual property rights of third parties.



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