



**BASF**  
We create chemistry

# BASF Solutions for Pressure-Sensitive Adhesives



# BASF - Customized Solution Provider for Adhesives Industry

## Adhesive Technology

- Leading water-based Acronal® adhesive technology for labels, tapes and films
- Cutting-edge acResin® UV hotmelt acrylic technology
- Advanced polymerization & deodorization technology for lowest possible VOCs
- Coating technology expertise & advisory

## Formulation Capability

- Tailor-made Coater-Ready adhesives formulations for easy processing
- Customized formulations fit your coating methods including curtain coater, gravure coater, slot-die coater, comma coater

## Sustainability Toolbox

- Proximity of our plants enable lower emissions during transportation
- Solvent-free
- Low VOCs
- Low Odor
- APEO-free; Formaldehyde free
- Biomass Balance

## Regulatory & Safety Expertise

- Fully compliant with global and national regulations and standards
- Professional regulatory expertise
- State-of-the-art product design to minimize risk on compliances
- Food compliances

## Technical Services

- Product recommendations
- Formulation adjustment
- On-site technical support
- Pilot Coater support
- Processing expert
- Local presence

R&D CAMPUS ▶ Innovation in Asia for Asia

Global state-of-the-art Manufacturing Footprint

## BASF IN ASIA PACIFIC: INNOVATION SET-UP

BASF creates innovation for customers and societies in Asia for Asia, and the world. We have 4 major R&D sites in Asia Pacific in Shanghai, Mumbai, Amagasaki and Suwon. Adhesives products are produced in various sites in China, Japan, Malaysia, Indonesia and India dedicated to serving our customers in Asia Pacific. Our application lab in Shanghai, Amagasaki, Pasir Gudang and Mumbai focus on customizing innovative solutions for local labels and tapes converters to meet the market requirements.



Innovation Campus Shanghai, China



Innovation Campus Mumbai, India



R&D Center Amagasaki, Japan



R&D Center Suwon, South Korea



Basic technical data & suitable area of application are indicated next to each product, but it must be stressed that this information is intended as a general guidance.

For more details information on specific applications please consult our local sales or technical BASF representative.

# LABELS



We offer a wide range of water-borne acrylic adhesives and UV curable acrylic hotmelts, which are used in the production of PSA for both paper and filmic labels. The consistent quality of our Acronal® dispersions as well as their high mechanical stability allow our customers to keep their production constant and minimizing adhesive-related production downtimes. Adequate cohesion at high adhesion levels provides a trouble-free converting process.

We develop our products using the know-how of our dedicated R&D resources as well as our team of coating experts, constantly looking for ways to improve the coating technology. Gravure and curtain coating heads for general purpose permanent (GPP) or All

temp Labels, running at very high speed up to >1000 m/min, a slot die for UV-curable acrylic hotmelts are just some examples of the different options we can offer our customers for trials simulating realistic production conditions.

Whether you produce high-end clear filmic labels or standard white labels, our products are the right choice. Excellent transparency can be achieved at high coating speed, and the fine-tuned adhesion / cohesion profile is designed for easy processing. Low VOC and low odor are becoming a distinct concern. We concentrate our endeavors to reduce VOC and odor from polymer design to deodorization technology in order to be compliant with food contact regulations.

Performance Segment	Product Series	Chemistry	Performance Level				Features and Benefits
			Tack	Peel	Shear	Aging	
<b>Filmic Label</b>							
Standard Clarity	High Tack	Acronal® Acrylic Dispersion	+++++	+++++	+++	+++	<ul style="list-style-type: none"> <li>High tack on various plastic and glass surfaces</li> <li>Superior balanced performance for peel and shear to fit high tack demand</li> <li>Good repositionability</li> </ul>
	Repositionable	Acronal® Acrylic Dispersion	+++	+++	++++	+++	<ul style="list-style-type: none"> <li>Superior balanced performance of peel and shear to plastic and film surfaces</li> <li>Excellent repositionability after 18 hours with clean removability</li> </ul>
	Removable	Acronal® Acrylic Dispersion	+	+	+++	+++	<ul style="list-style-type: none"> <li>Good removability on different surfaces, such as fabric and ceramics</li> <li>Give different peel &amp; shear balance with 2-component system</li> </ul>
	Squeezable	Acronal® Acrylic Dispersion	+++	+++	++++	+++	<ul style="list-style-type: none"> <li>Good anchorage to BOPP and PE film &amp; good adhesion to PE tube</li> <li>Good heat resistance</li> <li>Excellent conformability on curve surface for personal care applications</li> </ul>
Premium Clear-on-Clear	Wash-Off	acResin® UV-Curable Acrylic Hotmelt	+++	++	+++	+++	<ul style="list-style-type: none"> <li>Excellent washability in hot water bath with 80°C x 2% Caustic soda</li> <li>Excellent water whitening resistance</li> <li>Superior balanced performance of peel and shear to plastic surfaces</li> </ul>
	No-Label Look	Acronal® Acrylic Dispersion	+++	+++	+++	+++	<ul style="list-style-type: none"> <li>Well balanced performance in peel and shear for cosmetic &amp; personal care products</li> <li>Good water whitening resistance</li> <li>Excellent clarity on glass and transparent PET where "No-Label" look is required</li> </ul>
Durable	Premium	acResin® UV-Curable Acrylic Hotmelt	+++	+++	++++	++++	<ul style="list-style-type: none"> <li>High heat, water &amp; weather resistance</li> <li>Suitable for engine labels, mobile phone and dry cell battery labels.</li> </ul>

+ low ++ medium +++ high ++++ very high +++++ extremely high

All product series above can be further optimized to cater for various type of coaters, such as curtain, slot die, reverse gravure, comma, reverse roller & knife-off roll coaters.

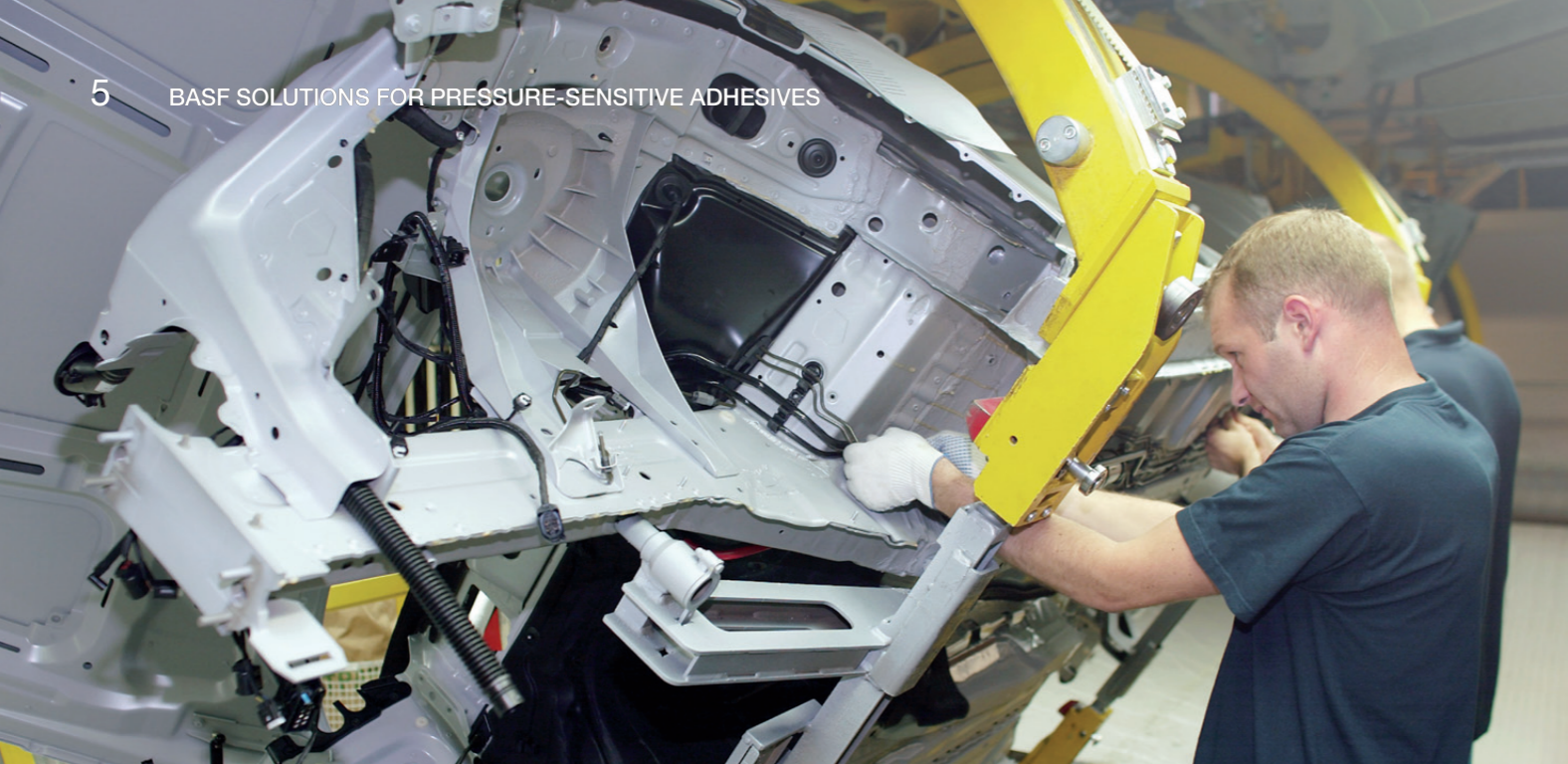
For all product series, we can offer both APEO-containing and APEO-free coater-ready formulations which can be further customized to meet low VOC and FDA 21 CFR 175.105 compliance requirements

All UV curable acrylic products are APEO-free, low VOC, ISEGA Direct Food Contact, FDA 21 CFR 175.105, 21 CFR 176.170, 21 CFR 176.180, 21 CFR 177.1010, ISO 10993-5 : Cytotoxicity Standard & Compliance with the dermal irritation test of OECD 404 : no skin irritation



Our acResin® technology makes it possible to produce absolutely water whitening resistant filmic labels combined with high temperature and chemical resistance. It is also possible to achieve different adhesion/ cohesion profiles just by varying the UVC dose of the curing process. Besides its excellent clarity, acResin® is food contact safe. This makes acResin® the number one solution for the manufacturing of paper and filmic labels for food, beverage and cosmetic applications.

Performance Segment	Product Series	Chemistry	Performance Level				Features and Benefits
			Tack	Peel	Shear	Aging	
<b>General Purpose Paper Label (GPPL)</b>							
General Purpose	Premium	Acronal® Acrylic Dispersion	++++	++++	+++++	++++	<ul style="list-style-type: none"> <li>Excellent performance on large variety of paper based substrates</li> <li>Maintains great performance after aging</li> <li>Excellent runnability at all speed levels</li> </ul>
	Performer	Acronal® Acrylic Dispersion	+++	++++	++++	++	<ul style="list-style-type: none"> <li>Well balanced performances on large variety of paper based substrates</li> <li>Excellent in performance versus cost</li> </ul>
<b>Specialty Paper Label</b>							
High Tack	Ultra - High Tack	Acronal® Acrylic Dispersion	+++++	+++++	+++	++++	<ul style="list-style-type: none"> <li>Ultra high tack on various cardboard, HDPE &amp; plastic surfaces</li> <li>Superior balanced performance of peel and shear to fit high tack demand</li> <li>Excellent runnability at all speed levels</li> </ul>
Removable	Premium Removability (General Use)	acResin® UV-Curable Acrylic Hotmelt	+	+	++++	++++	<ul style="list-style-type: none"> <li>Premium UV hotmelt solution with excellent removability &amp; aging resistance</li> <li>Very good removable performance for non-primed/ primed paper label</li> <li>Suitable for different adherents - HDPE trays, cardboards, ceramics &amp; glass</li> </ul>
		Acronal® Acrylic Dispersion	+	+	+++	+++	<ul style="list-style-type: none"> <li>Premium water-based solution with excellent removability</li> <li>Very good removable performance for non-primed/ primed paper label</li> <li>Suitable for different adherents - HDPE trays, cardboards, ceramics &amp; glass</li> </ul>
	Premium Removability (Books & Publications)	Acronal® Acrylic Dispersion	+	+	+++	+++	<ul style="list-style-type: none"> <li>Designed for non-primed/primed paper label for paper &amp; printed surfaces</li> <li>Excellent removability on paper &amp; printed surfaces</li> <li>Safe for children in compliance with global and national regulations</li> <li>Especially designed for kid's sticker books &amp; magazines</li> </ul>
All/Low Temperature	Premium Moist & Cold Surface	Acronal® Acrylic Dispersion	+++	+++	++	+++	<ul style="list-style-type: none"> <li>Application temperature at -10°C</li> <li>Excellent convertability versus conventional SBC hot melts</li> <li>Good for moist &amp; cold surfaces - LDPE, glass, metal</li> </ul>
	Standard Cold Surface	Acronal® Acrylic Dispersion	+++	+++	++	+++	<ul style="list-style-type: none"> <li>Application temperature at -5°C</li> <li>Excellent convertability versus conventional SBC hot melts</li> <li>Good for cold surfaces - LDPE, glass, metal</li> </ul>
Durable	Premium	acResin® UV-Curable Acrylic Hotmelt	+++	+++	+++	++++	<ul style="list-style-type: none"> <li>Excellent heat resistance, water resistance, water whitening resistance, salt water resistance and good weathering &amp; long term durability</li> <li>Suitable for chemical labels, tyre labels</li> </ul>
	Standard	Acronal® Acrylic Dispersion	++	+++	++++	+++	<ul style="list-style-type: none"> <li>Good heat resistance</li> <li>Good water resistance</li> </ul>
Pharmaceutical	Premium	Acronal® Acrylic Dispersion	+++++	+++++	+++	++++	<ul style="list-style-type: none"> <li>Good mandrel performance with low paper grammage</li> <li>Good edge-lift resistance for small diameter containers</li> </ul>



## SPECIALTY TAPES

BASF offers polymer dispersions, coater-ready (CR) adhesive formulations and UV-curable acrylic hotmelts for the PSA coating of specialty tapes. Specialty tapes are used in various applications such as automotive, construction and medical. Each of these applications has distinct requirements – with our broad product portfolio we can serve our customers with the most suitable products.

Our Acronal® portfolio comprises well-established high solid dispersions as well as new innovative products characterized by their ability to dry fast, enabling energy savings or increased line speed.

BASF's ongoing R&D efforts ensure the state-of-the-art performance of our dispersions and resins – with our formulation, application and process know-how, we are your competent partner for specialty tapes.



With the acResin® product range, BASF offers original UV curable acrylic hotmelt technology. acResin® features significant sustainability benefits while providing excellent adhesive performance. This makes acResin® the number one choice for numerous premium applications. acResin® offers extensive benefits such as high durability, high resistance to aging and humidity combined with low volatile organic compounds (VOC) and low fogging. Therefore our products are perfectly suitable for high performance automotive, construction and medical tapes.

Type	Product	Chemistry	Performance Level				Features and Benefits
			Tack	Peel	Shear	Heat Resistance	
Double Sided Tape	Acronal® A-CR 2301	Acronal® Acrylic Dispersion	+	+	+++	+++	Solvent free, low VOC, low odor, not tackified, standard peel at high temperature, suitable for automotive applications
	Acronal® A-CR 2302	Acronal® Acrylic Dispersion	++++	++++	+++	+++	High peel at high temperature, tackified with crosslinker
	Acronal® A-CR 2303	Acronal® Acrylic Dispersion	++	++	++++	++++	High peel at high temperature, tackified without crosslinker, suitable for E&E applications
	Acronal® 3630	Acronal® Acrylic Dispersion	+++	+++	+++	+++	Good balance in peel and shear
	Acronal® 3633	Acronal® Acrylic Dispersion	++++	++++	+	+	High peel with low shear
	Acronal® 3636	Acronal® Acrylic Dispersion	+	+	++++	++++	High shear with low peel
Protective Film	Acronal® N285	Acronal® Acrylic Dispersion	++	+++	+++	+	Good immediate tack, high peel strength and good cohesion. Good performance at low temp, for LDPE film on metal protection
	Acronal® 4D	Acronal® Acrylic Dispersion	++	++	++	++	Design for adhesive tapes and protective film
	Acronal® 7118	Acronal® Acrylic Dispersion	+	++	++++	++	No ghosting after releasing
Medical Tape	acResin® A 260 UV	acResin® UV-Curable Acrylic Hotmelts	++	++	+++	+++	FDA approved, well-balanced performance. No skin irritation /sensitivity/ eye irritation/ ecotoxic effect, ISO 10993 approved
Wire Harness Cloth Tape	acResin® A 260 UV	acResin® UV-Curable Acrylic Hotmelts	++	++	+++	+++	Extremely low VOC, low odor, high cohesion with good heat resistance, formulated with tackifier, 100% solid content.
	acResin® A 204 UV	acResin® UV-Curable Acrylic Hotmelts	++	+	++++	++++	Extremely low VOC, low odor, high cohesion with good heat resistance, pure solids without tackifier
Wire Harness PVC Tape	Acronal® V 215	Acronal® Acrylic Dispersion	+++	++	++	+++	Low VOC, low odor, much better heat resistance than rubber dispersion in wire harness application.
Aluminium Foil Tape	acResin® A 260 UV	acResin® UV-Curable Acrylic Hotmelts	++	++	+++	+++	Great balanced performance with high cohesion and heat resistance
	acResin® A 250 UV	acResin® UV-Curable Acrylic Hotmelts	+++	+++	++	++	High tack and peel while keeping strong cohesion
Re-position Tape	acResin® UV 3532	acResin® UV-Curable Acrylic Hotmelts	+	+	+++	+++	No residue, great repositionability and removability

+ low ++ medium +++ high ++++ very high

\* For any inquiry of additives for adhesive, please contact your local BASF sales representative

## MASKING TAPES

BASF is one of the key masking tape raw material suppliers serving many industry players worldwide. Our comprehensive product portfolio is developed based on water-based system as a driving force to our customers for a more sustainable growth.

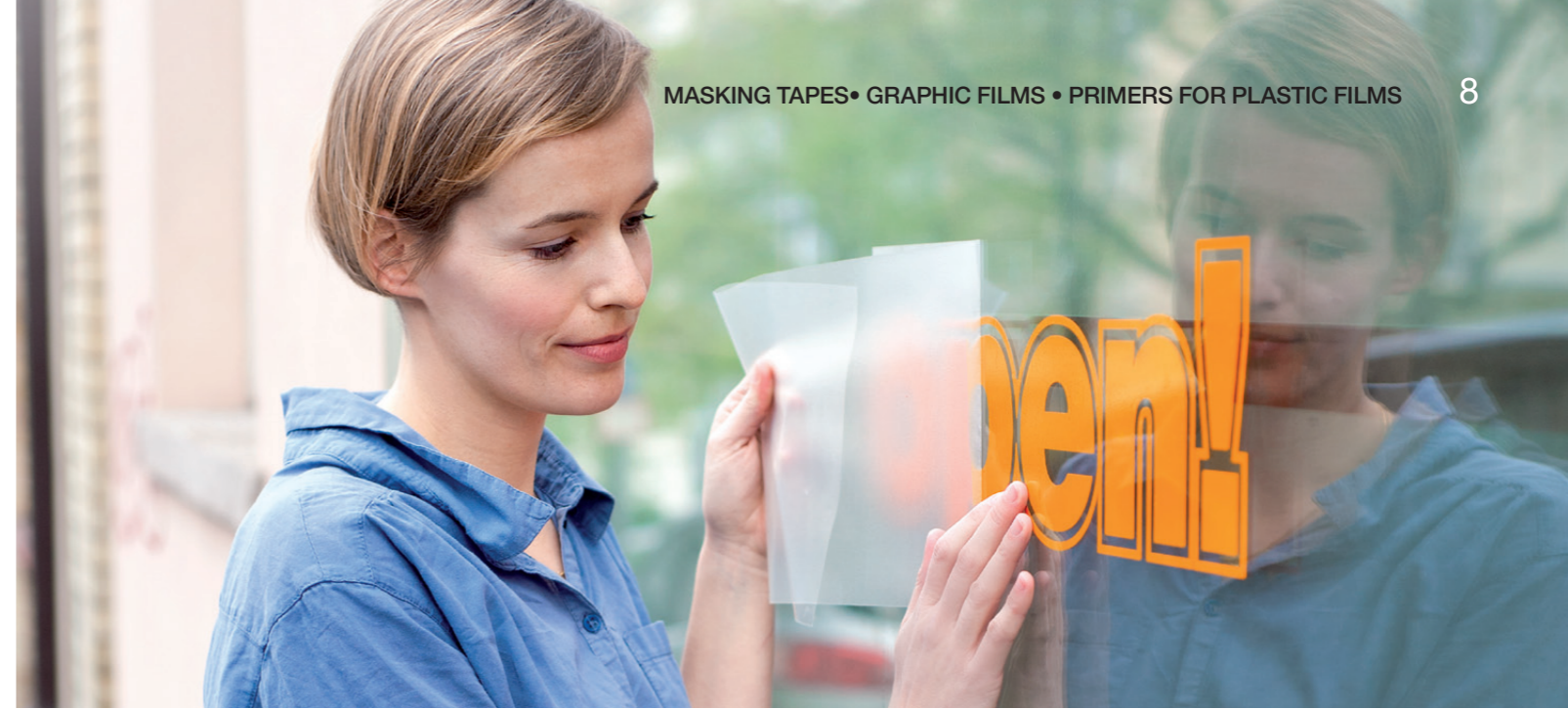
### BASF's offerings -

- Saturation agent to provide strength and functional properties to paper substrates
  - acrylic dispersion for high temperature applications
  - styrene butadiene dispersion for general purpose
- Release coating system to complement the level of adhesion
  - aqueous silicone and organic offerings to fit different level release force needs
- Pressure sensitive adhesives for temporary to permanent applications
- Barrier coating for special performance requirement



All BASF masking tape products can be customized to meet application or manufacturing needs by further optimization.

Application Segment	Product	Physical Properties				Features and Benefits
		Tg °C	Solid Content [approx, %]	pH	Viscosity [mPa.s]	
Saturation Agent	Styrofan® 7210	-23	49 - 51	6.0 - 7.5	150 - 550	Very soft binder with excellent water repellence and good running abilities
	Acronal® 4250	-26	54 - 56	7.0 - 8.5	100 - 500	Excellent high temperature resistance
Release Coating Agent	Acronal® TL 8822 ap	n/a	37 - 39	7.0 - 9.0	10 - 100	Designed as release coating adhesive for paper masking tape, balanced performance with reasonable release force.
Barrier Coating	Acronal® LN 579 ap	0	49 - 51	3.5 - 6.5	30 - 190	High solvent resistance
Pressure Sensitive Adhesive	Acronal® NX 2278	-35	57 - 59	6.5 - 8.0	n/a	Excellent removability, good plasticizer resistance, self-crosslinking, high shear



## GRAPHIC FILMS

Our polymer dispersions have been specially developed for use on soft PVC films for the graphics industry. These solvent-free adhesive raw materials are characterized by low water whitening, high plasticizer stability and very little shrinkage.

Product name	Data						Features and Benefits
	Solids content (%)	pH value <sup>1</sup>	Tg (°C)	Adhesion <sup>2</sup> (N/25 mm)	Cohesion <sup>3</sup> (hours)	Shrinkage Resistance	
<b>Acrylic dispersions</b>							
Acronal® 4 D	49	6.0 – 7.0	-43	9	>5	++	Raw material specially suitable for semipermanent PVC
Acronal® A 145	50	7.0 – 9.0	-45	3	> 120	+++	Specially suitable for removable PVC/OPP/PE and deliverable as Coater Ready (CR) for vario gravure systems
Acronal® A 240	51	5.0 – 6.5	-30	18	> 100	++++	Specially suitable for permanent PVC/OPP/PE and deliverable as Coater Ready (CR) for vario gravure systems
Acronal® A 245	52	6.5 – 9.0	-45	7	> 120	+++	Specially suitable for semipermanent PVC and deliverable as Coater Ready (CR) for vario gravure systems

+ low ++ medium +++ high ++++ very high

<sup>1</sup> according to DIN ISO 976

<sup>2</sup> according to FTM 1

<sup>3</sup> according to FTM 8

## PRIMERS FOR PLASTIC FILMS

BASF's product series for plastic films optimizes surface properties of filmic labels and films for the graphics industry. Our polymer dispersions provide an optimum in terms of printability, adhesion promotion and can help create barrier properties.

Product name	Data				Features and Benefits
	Solids content (%)	pH value	Viscosity <sup>1</sup>	Tg (°C)	
<b>Primers</b>					
Acronal® 6262	50	7.5 – 8.5	30 – 200	23°C, 100 1/s	Ink to polyolefines, specially suitable for filmic labels
Joncryl® 8383	40	7.6 – 8.6	~80	23°C, 100 1/s	

<sup>1</sup> Viscosity for primers in mPa • s according to DIN EN ISO 3219



# COATING CENTER

BASF's Coating Center in Ludwigshafen, Germany is a unique facility providing a wide range of coating solutions, product samples and demonstrations, as well as advice and support on adhesive technologies.

BASF works closely with key machine manufacturers to continually optimize coating technologies and new plant concepts. By using our installations, customers can maintain their daily production capacity while simultaneously pursuing product development. Our support can facilitate the decision-making for a change of technology or new investment.

Technical data	Dispersions	UV-curable acrylic hotmelts
Coating speed min. / max.	5 / 1800 mpm	15 / 700 mpm
Oven length / UV lamps	48 m	8 x 170 W/cm
Temperature sections	16 (8 upper air, 8 lower air)	
Temperature min. / max.	60 / 160 °C	
Width coating substrate	550 mm	550 mm
Width laminating substrate	570 mm	570 mm
Diameter core	76 or 152 mm / 3 or 6 inch	76 or 152 mm / 3 or 6 inch
Diameter rolls max.	1250 mm	1000 mm

### Available coating systems

Double chamber gravure system	Slot die with rotating bar
3 different single chamber gravure systems	Curtain die
Reverse gravure	Kiss coat
Mayer bar	
Comma bar	
Slot die	
Curtain coater	
Triple layer slide curtain	
Dual layer slide curtain	
Dual layer slot die	

### Rewinding unit

Flying splice	
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### Size of trial

Length of paper or film min.	3000 linear meter (backing and front substrate)	500 linear meter (depending on V:mpm)
Quantity of adhesive	200 kg	



# WE CREATE CHEMISTRY FOR A SUSTAINABLE FUTURE

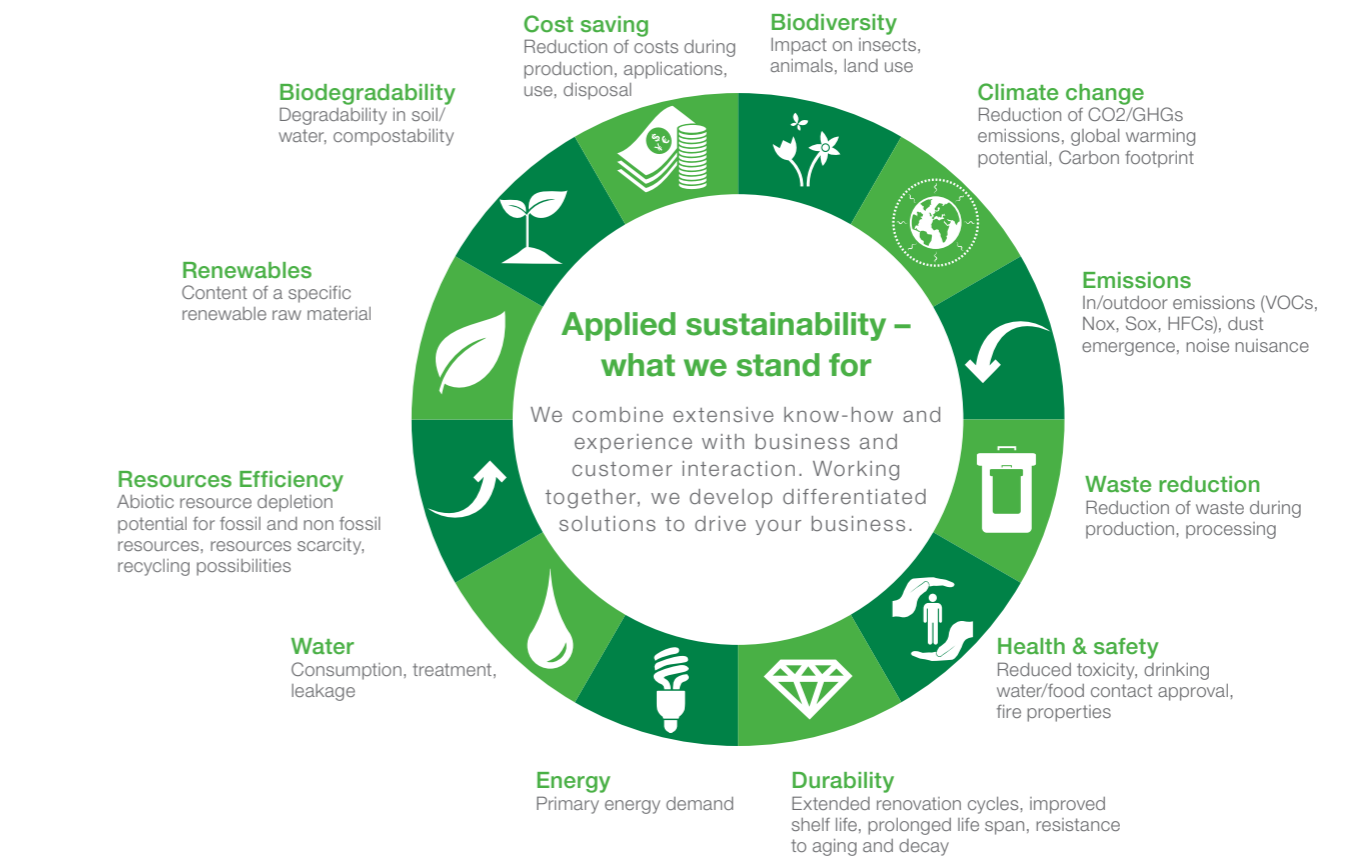
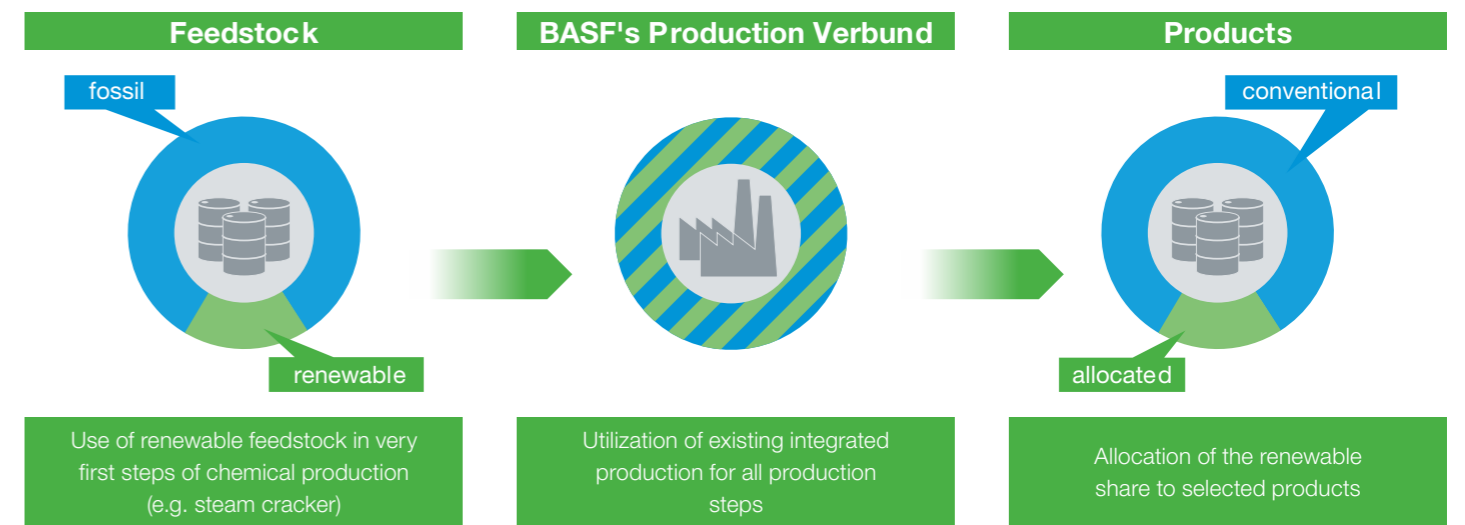
BASF wants to contribute to a world that provides viable future with enhanced quality of life for everyone. We do so by creating chemistry for our customers and society and by making the best use of available resources.

## BASF's biomass balance approach – A groundbreaking way of using renewable resources in production

BASF's biomass balance approach contributes to the use of renewable raw materials in its integrated production system and can be applied to the majority of the products in its portfolio.

Benefits of the biomass balance approach:

- Drives the use of renewable resources
- Saves fossil resources and reduces greenhouse gas emissions
- Independently certified
- Same product quality and properties



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