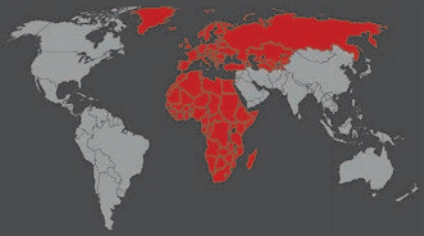
Portfolio Information

Adhesive Portfolio for the Food and Consumer Goods Industry



- Bonding Cartons, Cases, Trays
- Beverage Carton Applications
- Inline Labeling
- Mandrel Wheel Packaging
- Pallet Stabilisation

Our Word is Our Bond

Jowat Adhesives

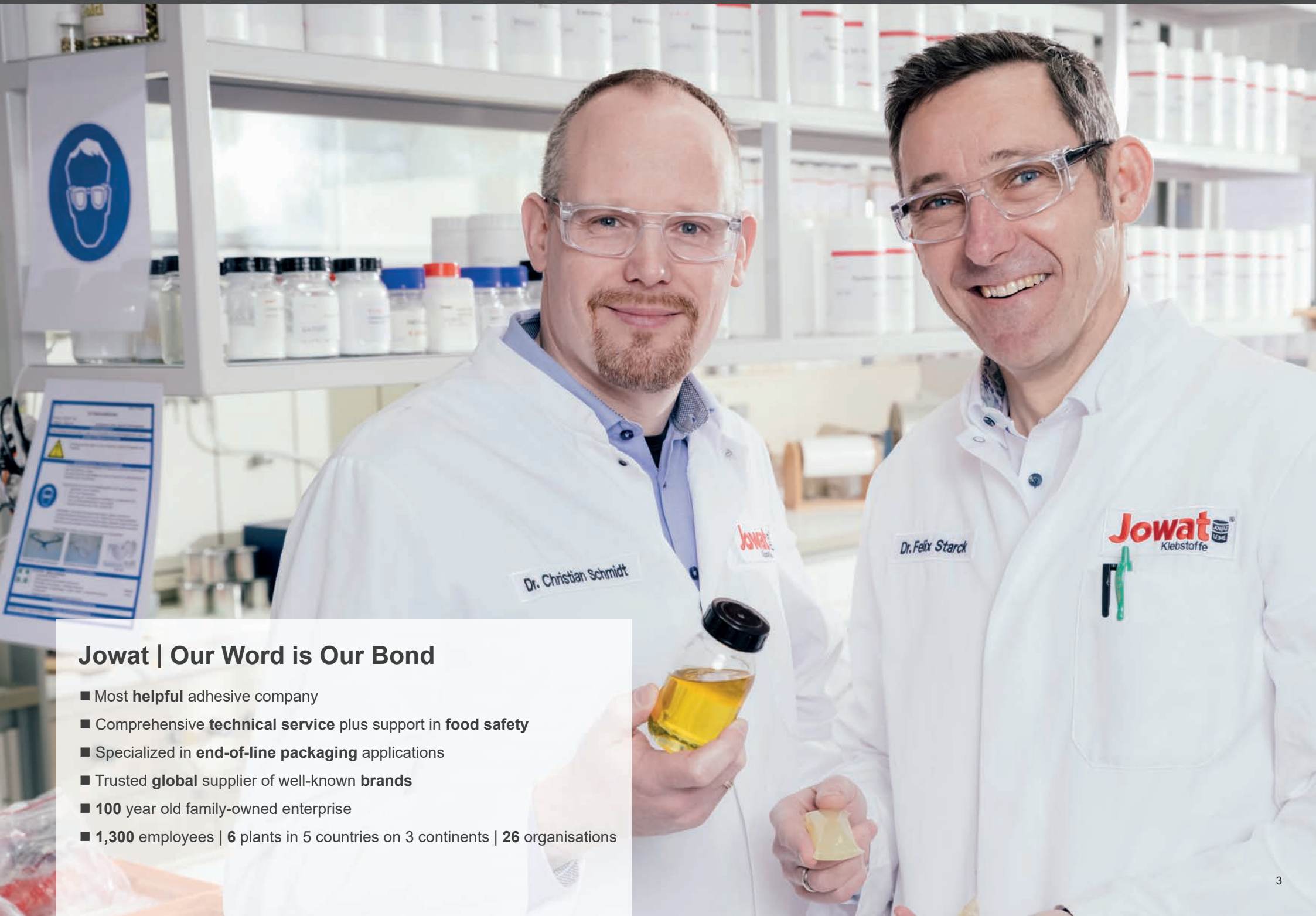
Leading-edge Adhesive Technology for the Food, Beverage and Consumer Goods Industries

Be it primary or secondary packaging, from paper wraps to cartons, trays and cases, beverage cartons, labels or pallet securing – the requirements for packaging processes are rising rapidly. Clean, energy-efficient and sustainable solutions are increasingly demanded in the industry – including in the development and application of adhesives.

Modern **Jowat** adhesives play a major role in facilitating highly efficient processes as expected by processors. **Jowat** adhesives have been established for many years in the different packaging processes and are highly valued by customers due to major economic benefits, such as reduced application amounts, minimized maintenance and less down times. **Jowatherm® PO, Jowatherm®** and **Jowacoll®** adhesives show an excellent performance in very demanding processes mastering fastest line speeds, extreme temperatures or difficult surfaces.

About half of all packaging manufactured worldwide comes into contact with food. Food safety has therefore always been a major focus of Jowat – from using suitable raw materials, meeting strict guidelines, as well as supporting our customers to ensure food safety compliance. Jowat understands the challenges in the industry and provides the expertise necessary to meet the high requirements.

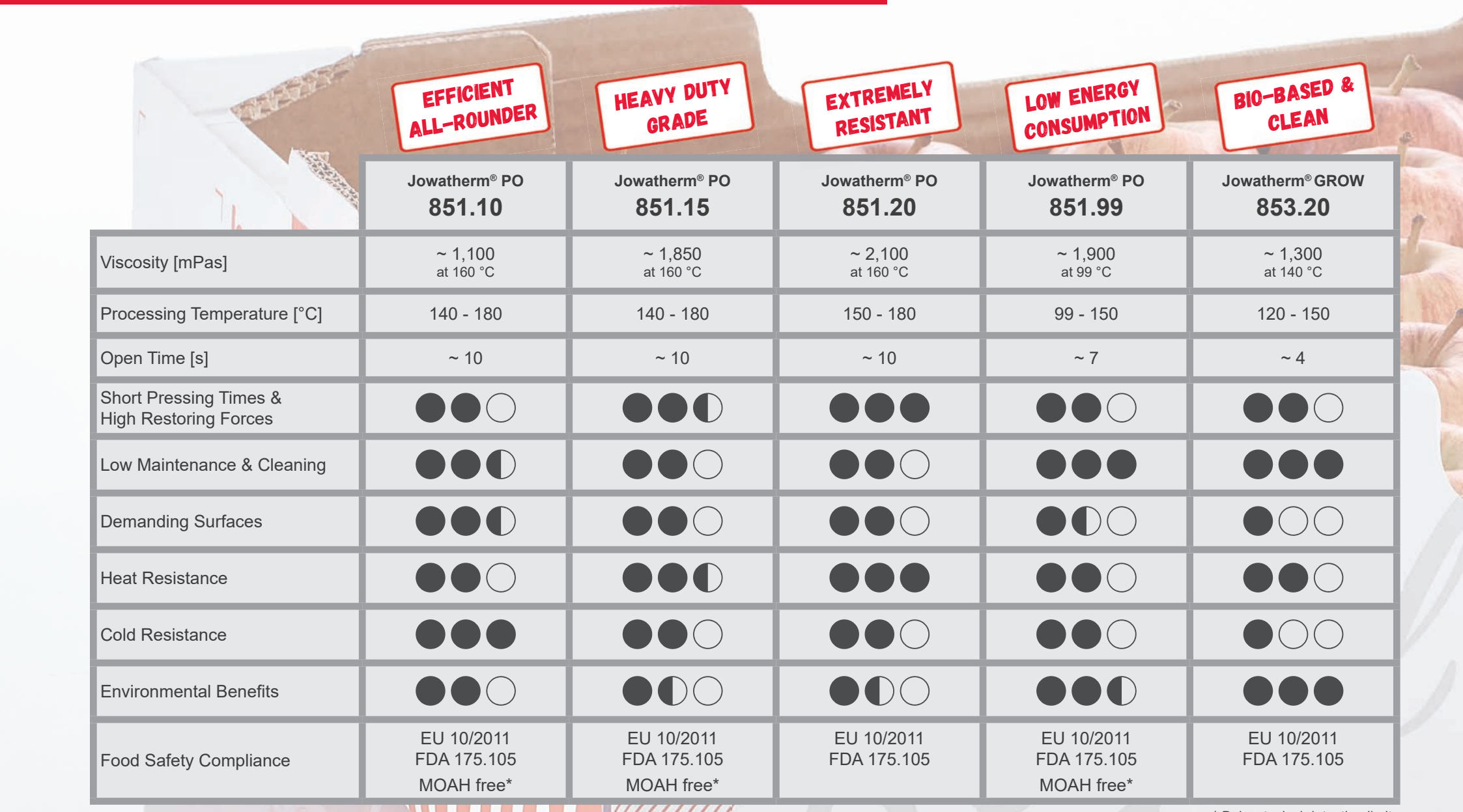
No matter what the requirements are in your packaging process, the modern adhesive products from **Jowat** provide a suitable solution for your application. Our permanent focus is to facilitate optimised manufacturing conditions and to meet the customer expectations in the best possible way.



Jowat | Our Word is Our Bond

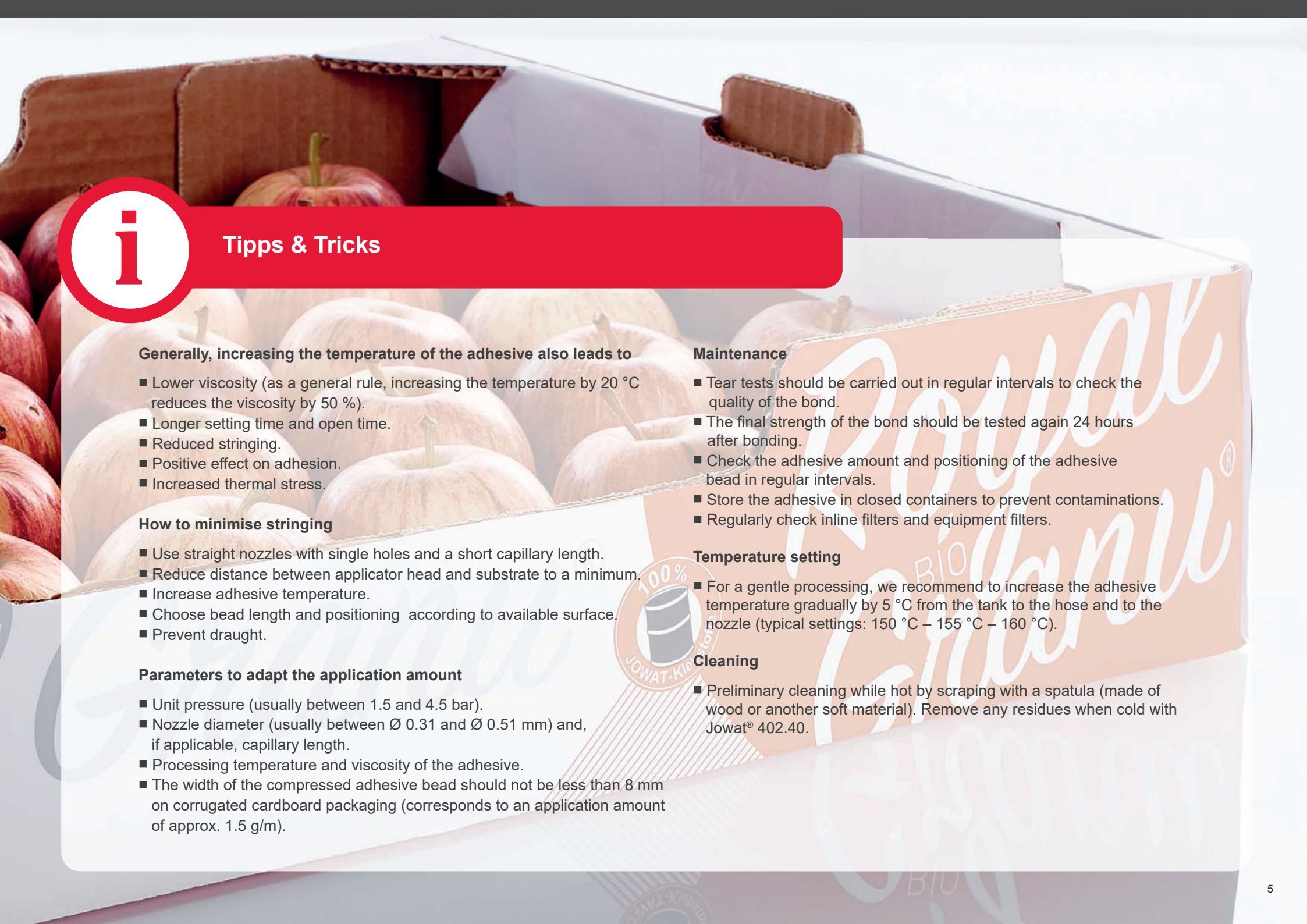
- Most **helpful** adhesive company
- Comprehensive **technical service** plus support in **food safety**
- Specialized in **end-of-line packaging** applications
- Trusted **global** supplier of well-known **brands**
- **100** year old family-owned enterprise
- **1,300** employees | **6** plants in 5 countries on 3 continents | **26** organisations

Bonding of Trays, Cartons and Cases



	EFFICIENT ALL-ROUNDER	HEAVY DUTY GRADE	EXTREMELY RESISTANT	LOW ENERGY CONSUMPTION	BIO-BASED & CLEAN
	Jowatherm® PO **851.10**	Jowatherm® PO **851.15**	Jowatherm® PO **851.20**	Jowatherm® PO **851.99**	Jowatherm® GROW **853.20**
Viscosity [mPas]	~ 1,100 at 160 °C	~ 1,850 at 160 °C	~ 2,100 at 160 °C	~ 1,900 at 99 °C	~ 1,300 at 140 °C
Processing Temperature [°C]	140 - 180	140 - 180	150 - 180	99 - 150	120 - 150
Open Time [s]	~ 10	~ 10	~ 10	~ 7	~ 4
Short Pressing Times & High Restoring Forces	●●○	●●◐	●●●	●●○	●●○
Low Maintenance & Cleaning	●●◐	●●○	●●○	●●●	●●●
Demanding Surfaces	●●◐	●●○	●●○	●◐○	●○○
Heat Resistance	●●○	●●◐	●●●	●●○	●●○
Cold Resistance	●●●	●●○	●●○	●●○	●○○
Environmental Benefits	●●○	●◐○	●◐○	●●◐	●●●
Food Safety Compliance	EU 10/2011 FDA 175.105 MOAH free*	EU 10/2011 FDA 175.105 MOAH free*	EU 10/2011 FDA 175.105	EU 10/2011 FDA 175.105 MOAH free*	EU 10/2011 FDA 175.105

* Below typical detection limits



Tipps & Tricks

Generally, increasing the temperature of the adhesive also leads to

- Lower viscosity (as a general rule, increasing the temperature by 20 °C reduces the viscosity by 50 %).
- Longer setting time and open time.
- Reduced stringing.
- Positive effect on adhesion.
- Increased thermal stress.

How to minimise stringing

- Use straight nozzles with single holes and a short capillary length.
- Reduce distance between applicator head and substrate to a minimum.
- Increase adhesive temperature.
- Choose bead length and positioning according to available surface.
- Prevent draught.

Parameters to adapt the application amount

- Unit pressure (usually between 1.5 and 4.5 bar).
- Nozzle diameter (usually between Ø 0.31 and Ø 0.51 mm) and, if applicable, capillary length.
- Processing temperature and viscosity of the adhesive.
- The width of the compressed adhesive bead should not be less than 8 mm on corrugated cardboard packaging (corresponds to an application amount of approx. 1.5 g/m).

Maintenance

- Tear tests should be carried out in regular intervals to check the quality of the bond.
- The final strength of the bond should be tested again 24 hours after bonding.
- Check the adhesive amount and positioning of the adhesive bead in regular intervals.
- Store the adhesive in closed containers to prevent contaminations.
- Regularly check inline filters and equipment filters.

Temperature setting

- For a gentle processing, we recommend to increase the adhesive temperature gradually by 5 °C from the tank to the hose and to the nozzle (typical settings: 150 °C – 155 °C – 160 °C).

Cleaning

- Preliminary cleaning while hot by scraping with a spatula (made of wood or another soft material). Remove any residues when cold with Jowat® 402.40.

Beverage Carton - Cap Bonding

	Viscosity [mPas]	Processing Temperature [°C]	Application	Heat Resistance	Cold Resistance	Low Maintenance & Cleaning	Food Safety Compliance	Remarks
Jowatherm® 250.00	~ 18,500 at 190 °C	180 - 210	Nozzle Roller	●●●	●●○	●●○	EU 10/2011 FDA 175.105 GB 9685	For widely used applicators and machines with nozzle or roller applicators
Jowatherm® 250.80	~ 10,100 at 180 °C	180 - 210	Nozzle	●◐○	●●●	●◐○	EU 10/2011 FDA 175.105 GB 9685	For widely used applicators and machines with nozzle or roller applicators
Jowatherm® 250.85	~ 2,000 at 180 °C	180 - 200	Nozzle	●◐○	●●○	●●◐	EU 10/2011 FDA 175.105 GB 9685	low stringing
Jowatherm® 855.00	~ 6,400 at 180 °C	170 - 190	Nozzle Roller	●●○	●●○	●●○	EU 10/2011 FDA 175.105	good thermal stability, available as granulate

Beverage Carton - Straw Attachment

	Viscosity [mPas]	Processing Temperature [°C]	Setting Speed	Heat Resistance	Cold Resistance	Low Maintenance & Cleaning	Food Safety Compliance	Remarks
Jowatherm® PO 256.05	~ 1,460 at 160 °C	140 - 170	●●◐	●●○	●●●	●●◐	EU 10/2011 FDA 175.105 GB 9685	For widely used applicators and machines with nozzle or roller applicators
Jowatherm® PO 256.00	~ 1,460 at 160 °C	140 - 170	●●○	●●○	●●●	●●◐	EU 10/2011 FDA 175.105	For widely used applicators and machines with nozzle or roller applicators
Jowatherm® PO 851.10	~ 1,100 at 160 °C	140 - 180	●●●	●●◐	●●◐	●●●	EU 10/2011 FDA 175.105	-

Inline Labelling

	Viscosity [mPas]	Processing Temperature [°C]	Application	Colour	Heat Resistance	Cold Resistance	Low Maintenance & Cleaning	Food Safety Compliance	Remarks
Jowatherm® PO 252.45	~ 850 at 160 °C	140 - 180	Nozzle Roller	Light Yellow	●●○	●●○	●●●	EU 10/2011 FDA 175.105	Paper & Plastic Labels Low Staining



Mandrel Wheel Packaging

	Viscosity [mPas]	Solids content [%]	pH Value	Base	Demanding Surfaces	Low Maintenance & Cleaning	Food Safety Compliance	Remarks
Jowacoll® 707.41	~ 2,200	~ 50.0	~ 4.5	PVAc	●○○	●●●	EU 10/2011 FDA 175.105	for Packaging e.g. Coffee, Sugar, Flour, Cereals
Jowacoll® 746.07	~ 2,150	~ 56.0	~ 7.0	Copolymer	●●●	●●○	EU 10/2011 FDA 175.105	for Packaging e.g. Coffee, Sugar, Flour, Cereals
Jowacoll® 747.91	~ 2,200	~ 56.0	~ 4.0	Copolymer	●●●	●●○	FDA 175.105	for Packaging e.g. Coffee

Pallet Stabilization

	Viscosity [mPas]	Processing Temperature [°C]	Application	Colour	Surface Tack	Low Maintenance & Cleaning	Supply Form	Remarks
Jowatherm® PO 256.00	~ 1,460 at 160 °C	140 - 170	Bead Swirl Spray	White Translucent	◐○○	●●●	Granules	Dull Surface
Jowatherm® PO 252.45	~ 850 at 160 °C	140 - 180	Bead Swirl Spray	Light Yellow	●●○	●●○	Pillow	-
Jowatherm® 254.20	~ 12,500 at 160 °C	150 - 170	Swirl Spray	White Translucent	●●●	●○○	Block	Peelable



Pallet Stabilisation

Adhesives can be applied directly to the package or on slip sheets preventing the load from slipping during transport:

- Safe and stable pallet units
- Highly cost-efficient solution
- Significant reduction of stretch film
- Less plastic
- Less waste and recycling cost
- Increased line efficiency
- No concealing of barcodes or graphics

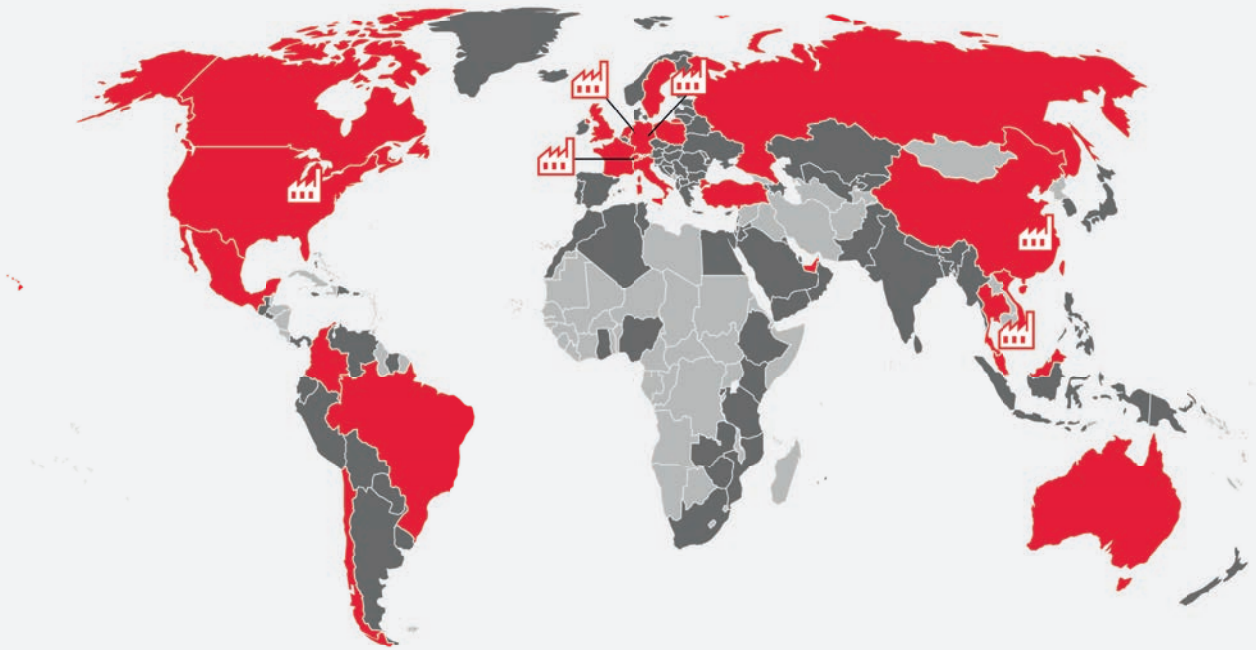
Jowat - Our Word is Our Bond

Jowat SE with headquarters in Detmold is one of the world's leading suppliers of industrial adhesives. These are mainly used in woodworking and furniture manufacture, in the paper and packaging industry, for graphic arts, in the textile, automotive as well as in the electrical industry. The company was founded in 1919 and has manufacturing sites in Germany in Detmold and Elsteraue, plus four other producing subsidiaries, Jowat Corporation in the USA, Jowat Swiss AG, Jowat Manufacturing in Malaysia and Jowat China Adhesives. The supplier of all adhesive groups is manufacturing over 100,000 tonnes of adhesives per year, with about 1,400 employees. A global location structure with 26 organisations plus partner companies is guaranteeing local service with close customer contact.



Have we sparked your interest?

As an active innovation partner, Jowat supports processors in the food and consumer goods industry around the world in meeting the expectations of their customers. As one of the globally leading adhesive specialists with many decades of experience, we have a deep understanding of the different challenges in the packaging processes of fast-moving consumer goods – from ever-shorter cycle times, increasingly demanding surfaces or rising requirements regarding process efficiency and sustainability of the packaging.



Manufacturing locations
Markets with Jowat Group companies
Markets with Jowat distribution partners

We are part of the entire manufacturing chain and provide a comprehensive advisory service and competent know-how: from the constant search for and testing of new, sustainable raw materials to the development of innovative adhesive products in close cooperation with subsuppliers and processors within the framework of the technical advisory service, to individual process analyses. For many years, Jowat has played a major role in safeguarding success and protecting investments by delivering adhesive solutions for modern packaging processes to optimise products and processes.

Have we sparked your interest? Contact us! We look forward to working together.

The information given in this leaflet is based on test results from our laboratories as well as on experience gained in the field, and does in no way constitute any guarantee of properties. Due to the wide variety of different applications, substrates, and processing methods that are beyond our control, no liability may be derived from these indications nor from the information provided by our free technical advisory service. Before processing, please request the corresponding data sheet and observe the information in it! Customer trials under everyday conditions, testing for suitability in normal processing conditions, and appropriate fit-for-purpose testing are absolutely necessary. For the specifications and for further information, please refer to the latest technical data sheets.

Jowat®
Adhesives

www.jowat.com

Jowat SE
Ernst-Hilker-Straße 10-14
32758 Detmold · Germany
Telefon +49 (0) 5231 749-0
www.jowat.de · info@jowat.de