REHAU®
Unlimited Polymer Solutions

# RAUKANTEX PP
## Technical information

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### 1. Materials for edgeband processing

REHAU uses the thermoplastic materials PVC (polyvinyl chloride), ABS (acrylonitrile-butadiene-styrene), PP (Polypropylene) and PMMA (polymethylmethacrylate) in its extensive RAUKANTEX edgeband product range. Thermoplastic materials are polymer materials which can be melted and therefore thermoformed, processed and recycled.

### 2. PP as an edgeband material

PP (polypropylene) is an ecologically sustainable thermoplastic material with excellent material and processing properties. PP provides outstanding chemical resistance and sustainability like no other edgeband material. Processing is possible without any problems as with the other RAUKANTEX products. In many areas chlorine-free thermoplastics, such as PP, are specified because of their disposal properties.

### 3. PP material (polypropylene)

Polypropylene is a semi-crystalline material which belongs to the polyolefin group. Its physical properties and high melting point are the result of its semi-crystalline structure. With its very low specific gravity of 0.9 PP is one of the lightest thermoplastics. RAUKANTEX PP formulation also meets category 2 of the PAK and fire protection class B2 to DIN 4102.

#### Areas of application

The spectrum of applications for RAUKANTEX PP is almost limitless: from the office to the bathroom and kitchen, exhibition stand construction and shop fitting, the living area through to commercial construction. The processing-friendly RAUKANTEX PP formulation affords both smooth continuous processing and easy application to furniture panels with suitable radii. Due to its excellent chemical resistance, the PP material is suitable for laboratory equipment.

RAUKANTEX pure PP edgebands are coated on the reverse with a universal primer which guarantees adhesion of the edgeband to the substrate. This primer allows processing with all suitable hot melt adhesives.

#### Recycling/disposal

The RAUKANTEX PP edgeband waste can be burned in units approved to do this by taking into account the legal stipulations without any problems. No by-products that are harmful to health are produced if it is burned in the correct way. Even wood based boards with PP edgeband applied can be disposed of easily.

## Characteristics/Properties

The properties of the RAUKANTEX PP edgebands fulfil the requirements of the furniture industry. The PP edgeband possesses the following properties:

- Shore hardness D
  RAUKANTEX PP edgebands achieve good results with a Shore hardness D of 75 +/- 4 to EN ISO 868.

- Heat resistance / Vicat softening temperature
  With a value of > 100 °C to ISO 306 / B50 RAUKANTEX PP edgebands are especially suited for use in the furniture industry. The low shrinkage also has a positive influence on the piece of furniture at high temperatures.

- Abrasion resistance
  The surface of RAUKANTEX decorative edgebands in PP is protected against scratches with a UV lacquer, whereby the decorative designs demonstrate excellent scratch and abrasion resistance.

- Chemical resistance
  RAUKANTEX PP edgebands are chemically resistant to all household cleaners to DIN 68861 Part 1 and fulfil stress group 1B.

- Light fastness
  RAUKANTEX PP edgebands are regularly tested in an accredited laboratory in line with EN ISO 4892-2 regarding light fastness. With a light fastness of ≥ 6 on the blue scale these edgebands are ideally suited for interior application. An analysis of the colour deviation is then carried out along the lines of EN ISO 105-A02 using the grey scale.

- Cleaning
  Special plastic cleaners are recommended for cleaning RAUKANTEX PP edgebands. The use of substances containing solvents and alcohol is strongly advised against.

| | PVC | ABS | PP | PMMA |
|---|---|---|---|---|
| **Light fastness**<br>In accordance with EN ISO 4892-2 | ≥ 6 | ≥ 6 | ≥ 6 | ≥ 6 |
| **Shrinkage**<br>Edgeband 3 mm 1h at 90°C | ≤ 1.7 % | ≤ 1.7 % | ≤ 0.2 % | ≤ 1.0 % |
| **Vicat softening point**<br>to ISO 306, Method B50 | approx. 67°C | approx. 90°C | approx. 100°C | approx. 80°C |
| **Hardness Shore D**<br>to DIN 53505 | 79 ± 4 | 70 ± 4 | 75 ± 4 | 80 ± 3 |
| **Chemical resistance**<br>to DIN 68861-1 | Very good – 1B | Good – 1B | Very good – 1B | Good – 1B* |
| **Thermal conductivity**<br>to DIN 52612 | 0.16 W/km | 0.18 W/km | 0.41 W/km | 0.18 W/km |

**Limited resistance against solvents and alcohols.*

## Storage

If stored properly RAUKANTEX edgebands can be stored for min. 12 months. For edgebands older than 12 months, however, a processing trial should always be carried out prior to series processing.
Recommended storage conditions are:
- Room temperature (ca. 18 °C to 25 °C)
- Dry
- Clean
- No vapours containing solvents
- Protected from light

## Standard tolerances

RAUKANTEX pure PP edgebands are subjected to regular quality checks in order to guarantee the high quality of every production run. In addition to this we are constantly working to improve the raw material properties.

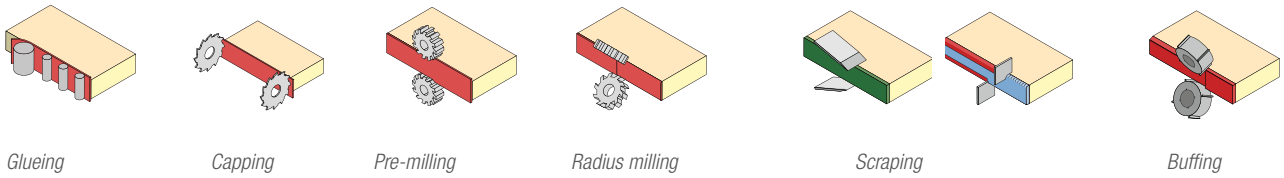
The production tolerances for edgebands are defined exactly and are checked throughout every production run.
The corresponding standard tolerances for each material can be found in the respective tolerance sheet. The standard tolerances for RAUKANTEX edgebands can be obtained from your contact person on request or you can find them on the internet.

## 4. Processing

### Manual processing
It is possible to process RAUKANTEX PP edgebands manually using edge clamps. Special PVA adhesives, solvent-based adhesives and cartridge adhesives (e.g. Kantol) can be used for gluing by hand. Independent function tests should be carried out in order to determine the suitability of the technical application in each case.

### Machine processing
RAUKANTEX PP edgebands can be processed on all edgebanders (straight line edgebander and CNC (processing centres) using a hot melt adhesive. The various processing steps such as gluing, capping, milling, scraping and also reworking with buffing wheels and hot air are possible without any problems.

### Process steps of machine processing




To achieve a high-quality and durable edgeband application several important processing parameters have to be considered which depend on the components used (edgeband, glue and boards), the edgebander and the ambient temperature. A processing trial should generally be carried out prior to series processing. The reference values specified by the relevant manufacturer are to be observed.

### Adhesive
RAUKANTEX PP edgebands can be processed with all commercially available hot melt adhesives (EVA, PA, APAO and PUR). These highly heat-stable adhesives together with the RAUKANTEX PP edgebands guarantee a secure bond.

For products exposed to high ambient temperatures (e.g. containerised transportation) hot melt adhesives with a high softening temperature are recommended. Due to the high heat resistance of the PP edgebands of approx. 100 °C material softening during general applications does not occur.

During adhesion ensure that the adhesive is applied consistently and that the glue spreading rollers do not extend too far into the line of the board.
The processing temperature of the adhesive varies depending on the type of adhesive. Be aware that the thermostats in melt containers are often inaccurate and the temperature of the applicator roller can vary by up to 30 °C.

- Processing temperature
  To achieve the best possible results during edgeband application the boards and edgebands should be processed at a room temperature of > 18 °C otherwise the adhesive sets too quickly. Draughts should also be avoided for this reason.

- Wood humidity
  The optimum wood humidity of the board material is between 7 and 10%.

- Processing feed
  RAUKANTEX PP edgebands are suitable for the common processing rate of feed both in the commercial as well as industrial sector.

- Adhesive application
  To achieve ideal processing the information provided by the adhesive manufacturer should be observed. The adhesive application should be calculated in such a way that small beads of adhesive are pressed out from the edges of the freshly glued edgebands and the voids between the substrate particles are filled. The amount of adhesive in each case depends on the type of board, the substrate density, the edgeband material, the processing feed and the type of adhesive.

## Milling

If possible use a 3 to 6 tooth milling tool with a diameter of 70 mm and 12.000 to 18.000 RPM counter to board travel (up-cutting). Inappropriate speeds or blunt tools can damage the edgebands. If a smear effect occurs the speed of the milling tool or the number of teeth should be reduced. The quality of the milled surface (e.g. chatter marks) can be improved by adjusting the feed, speed and number of blades.

## Scraping

PP exhibits good quality during scraping, the chip produced by the scraper should be a maximum of 0.1-0.15 mm. To obtain a high-quality surface after scraping, aim for milling finish with as few chatter marks as possible.

## Buffing

RAUKANTEX PP edgebands can be buffed to generate a high quality edge radius. Colour deviation (stress whitening) caused during scraping of the edge radius can be eliminated to achieve a consistent finish by using a down-cutting buffing wheel set-up i.e. the wheels rotate with the travel of the board. Additionally, if release and cleaning agents are used during board processing, the buffing wheels will remove any unwanted glue residue.

| Processing properties | | PVC | ABS | PP | PMMA |
|---|---|---|---|---|---|
| **Capping** | | good | good | good | good |
| **Milling direction** | **Straight line processing** | Up-cutting | Up-cutting | Up-cutting | Up-cutting |
| | **Processing centre** | Down-cutting/ Up-cutting | Down-cutting/ Up-cutting | Up-cutting | Down-cutting/ Up-cutting |
| **Pre-milling** | | good | good | good | good |
| **Radius milling** | | good | good | good | good |
| **Contour milling** | | good | good | good | good |
| **Scraping** | | very good | good | good | good |
| **Buffing** | | very good | good | good | good |
| **Gluing** | | Standard market hotmelts | Standard market hotmelts | Standard market hotmelts | Standard market hotmelts |
| **Polishability** | | good | good | average | very good |
| **Stress whitening tendency** | | low | average | low | low |
| **Processing centre capability** | | very good | good | very good | demanding |

We recommend that the rotating speed of the buffing wheel is reduced by about 50% to 1.400 RPM. Also, the contact pressure of the buffing wheel should not be set too high. This will avoid unnecessary smearing and an excessive build-up of heat. The position of the wheel in both axes should be set at a slight angle to the surface of the edgeband.

## Processing with invisible joint technology

RAUKANTEX pro PP edgebands are designed to be processed on edgebanding machines working with $CO_2$ or diode laser, hot air or NIR processes. Please see special information in the technical information for invisible joint edgebands.

| | Problem | Diagnosis of the problem |
|---|---|---|
| 1 | The edgeband can easily be removed by hand.<br><br>The hot melt adhesive remains on the chipboard (straight line) or on the edgeband (processing centre).<br><br>It is possible to see the marking made by the adhesive application roller. | - Adhesive application not sufficient<br>- Room or edgeband temperature too low<br>- Draughty environment<br>- Hot melt adhesive temperature too low<br>- Processing feed too low<br>- Contact pressure of the pressure roller too low |
| 2 | The edgeband can easily be removed by hand.<br><br>Hot melt adhesive remains on the chipboard (straight line).<br><br>The hot melt adhesive surface is completely smooth. | - Board and/or edgeband is too cold.<br>- Check hot melt adhesive type<br>- Check primer application |
| 3a | Glue joint is not sealed (straight line). | - Adhesive too cold<br>- Adhesive application too low<br>- Contact pressure too low<br>- Edgebands have incorrect pre-tensioning<br>- Scoring saw alignment is incorrect<br>- Contact between the adhesive application roller and board<br>- Debris not removed from board cross-section |
| 3b | Glue joint is not sealed (processing centre). | - Contact pressure too low<br>- Curvature of the edgeband too high<br>Measure/Proposal: Application of external heat<br>- Check hot melt adhesive type (insufficient heat adhesion)<br>- Edgeband pre-tensioning is incorrect<br>- Adhesive does not set in good time<br>Measure/Proposal: Reduce the adhesive temperature |
| 4 | The glued edgeband does not show sufficient adhesion at the start. | - Adhesive application roller is not positioned correctly<br>- Increase the amount of adhesive |
| 5 | Milling lines are visible. | - Feed too high<br>- Number of blades too low<br>- Speed too low<br>Measure/Proposal:Rework with scraper and buffing station |
| 6 | Edgeband splits during the milling process. | - Edgeband vibrates during the milling process<br>- Adhesion insufficient<br>- Edgeband projection too large<br>Measure/Proposal: Check adhesion parameters<br>Measure/Proposal: Check adhesive type |
| 7 | Stress whitening of the edgeband in the milled area, principally after scraping. | - Chip of the scraper too thick<br>- Scraper set up incorrectly<br>Measure/Proposal: Blunting of the scrapers edge<br>Measure/Proposal: Rework with buffing station |
| 8 | Stress whitening occurs during processing centre processing. | - Micro-cracks occur in the radius area due to processing temperature being too cold<br>Measure/Proposal: Application of external heat in the radius area<br>Measure/Proposal: Use of larger radiuses or thinner edgebands |

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