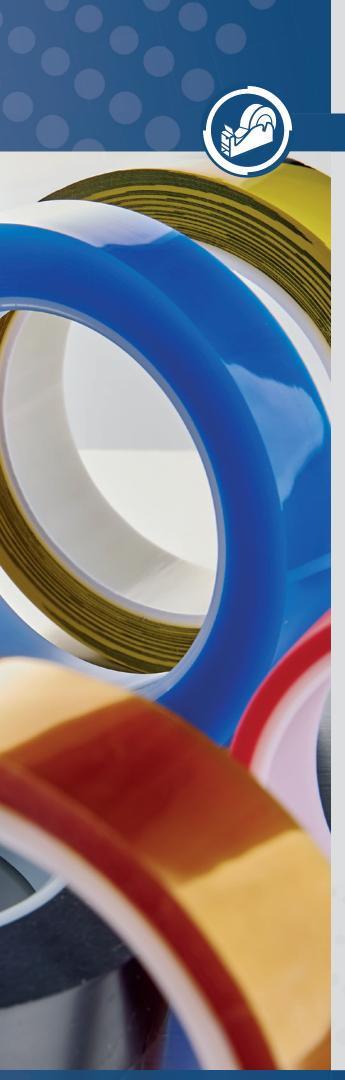
# ► Adhesive tapes & labels





# Chapter 10

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# **Interesting facts** about cleanroom adhesive tapes



# Adhesive tapes for cleanrooms: They deliver what they promise.

In the field of adhesive tapes for cleanrooms we are working together with various international manufacturers who can fulfil the following criteria and requirement profiles. With well over 100 cleanroom appropriate adhesive tapes a wide assortment is available covering nearly every application.

#### Why cleanroom suitable adhesive tapes?

If you use standard adhesive tapes, for example from a DIY shop, you could bring unknown contamination into your cleanroom. Cleanroom adhesive tape however is manufactured from high - grade material and cleaned twice, packaged and controlled in a cleanroom so that the particle emission is significantly reduced.

A renowned manufacturer has compared his cleanroom adhesive tape for particle emission with a common adhesive tape.

The following values were determined:

Particle emission comparison	Cleanroom tape	Standard tape
Particle size 0.3 μm	1	351
Particle size 0.5 µm	0	146

► ADHESIVE TAPES & LABELS

# Requirements for cleanroom adhesive tapes

#### General requirements profile

- high cleanliness
- low particle shed
- plastic core
- chemical resistant
- low outgassing of the adhesives
- production under controlled conditions
- double packed
- residue-free removal
- high resilience

# Special requirements depending on application

- autoclavability
- **ESD-suitability**
- high elasticity
- high temperature consistency
- tapes with special hazard warning print
- double-sidedadhesive area
- ▶ tapes with indicator function for steam sterilisation
- availability in different finishes



#### Which adhesive tape or label is most suitable for your application?

The choice of the backing material and adhesive plays a crucial role. Below some advantages and disadvantages of the various backing materials and characteristics of the adhesives to help in the selection process:

Basic materials f	Basic materials for adhesive tapes and labels							
Material	Advantages	Disadvantages						
Polypropylene/ Polyolefin	<ul><li>economical</li><li>little to no ductility, if so: good for printed labels and surface coating such as ESD-requirement</li></ul>	<ul> <li>low temperature resistance</li> <li>little to no ductility, if so: negative for adhesive tape, as it doesn't conform to uneven surfaces</li> </ul>						
Vinyl	<ul> <li>economical</li> <li>stable, abrasion resistant</li> <li>UV radiation stable</li> <li>high stretchability, good for conformability</li> <li>opaque, good for colour marking</li> </ul>	<ul> <li>outgassing</li> <li>not suitable for high temperatures</li> </ul>						
Polyethylene	<ul> <li>stable</li> <li>easy to tear off by hand</li> <li>high stretchability, good for conformability</li> </ul>	<ul> <li>not suitable for high temperatures</li> <li>not suitable for printing and processing</li> </ul>						
Polyester	<ul><li>good abrasion resistance</li><li>dimensionally stable</li></ul>	<ul><li>thin, can easily rip or tear</li><li>not suitable for high temperatures</li></ul>						
Polyimid	<ul><li>suitable for very high temperatures</li><li>low ductility, so easy to print, process and coat</li></ul>	▶ amber coloured						
Standard adhesi	ves for tapes and labels							
Adhesive	Characteristics							
Rubber	<ul> <li>economical</li> <li>good for thick coatings and high strength, e.g. packaging and construction tapes</li> </ul>							
Acrylic	<ul> <li>good for thin coatings, e.g. for wafer box tapes or labels</li> <li>good stability</li> </ul>							
Silicone	best solution for high temperature							

# Adhesive tapes for construction and colour markings

# **Cleanroom Construction Tapes**

Short description	Colour	Width	PU per bag	Box- quantity	Manufacturer code	Art. No
Trademarked Blue and White Striped	0 0	0.5"	12 rolls	48 rolls	1153	920115
Protocol Tape		0.75"	8 rolls	64 rolls		
– strong adhesion force –	• •	1"	6 rolls	48 rolls		
		1.5"	4 rolls	32 rolls		
		2"	3 rolls	24 rolls		
		3"	2 rolls	16 rolls		
		4"	1	12 rolls		
Polyethylene Medium Adhesion		0.5"	12 rolls	48 rolls	1154	920115
Cleanroom Tape		0.75"	8 rolls	64 rolls		
– medium adhesion force –		1"	6 rolls	48 rolls		
		1.5"	4 rolls	32 rolls		
		2"	3 rolls	24 rolls		
		3"	2 rolls	16 rolls		
		4"	1 roll	12 rolls		
Vinyl Medium Adhesion	$\circ \bullet \bullet$	0.5"	12 rolls	48 rolls	1160	920116
Cleanroom Tape	• • •	0.75"	8 rolls	64 rolls		
– medium adhesion force –		1"	6 rolls	48 rolls		
		1.5"	4 rolls	32 rolls		
		2"	3 rolls	24 rolls		
		3"	2 rolls	16 rolls		
		4"	1 roll	12 rolls		
Polyolefin High Purity Medium	0	0.5"	12 rolls	60 rolls	1164	920116
Adhesion Cleanroom Tape		0.75"	8 rolls	40 rolls		
– medium adhesion force –		1"	6 rolls	30 rolls		
		1.5"	4 rolls	20 rolls		
		2"	3 rolls	15 rolls		
		3"	2 rolls	10 rolls		

0.5" = 1.27 cm / 0.75" = 1.905 cm / 1" = 2.54 cm / 1.5" = 3.81 cm / 2" = 5.08 cm / 3" = 7.62 cm / 4" = 10.16 cm



Usually also available individually packed, with the same carton quantity!

ADHESIVE TAPES & LABELS

Cleanroom **Construction Tapes\*** have been designed for construction in critical environments and for support applications.

For example, they can be used to hang or fix heavy plastic canvas, to create temporary walls, to tape around cart wheels, for plumbery, floor marking and colour coding.

Two-colour striped warning tapes help to identify critical areas in cleanrooms according to EU-OSHA (European Agency for Safety and Health at Work).

Super-Tack® Construction Tapes have an extra strong adhesive power, but leave no residue when removed.

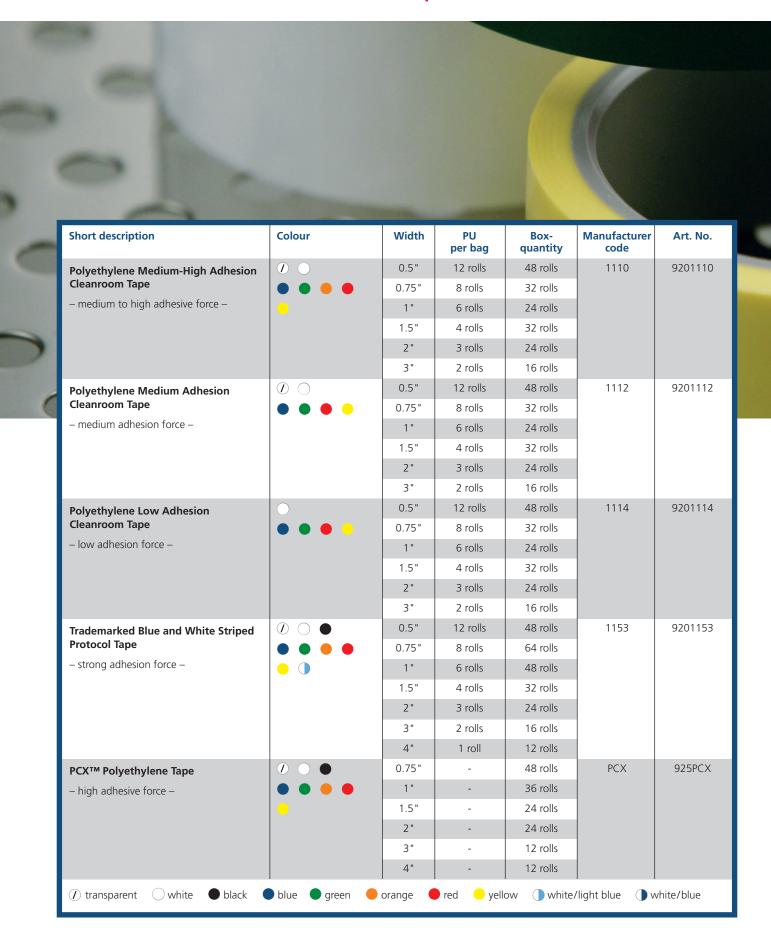


<sup>\*</sup> Designation of the adhesive tapes according to their usual use.

Of course, other areas or types of application, etc. are also possible.

# Adhesive tapes for the semiconductor industry

# **Semiconductor Tapes**



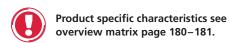


Cleanroom **Semiconductor Tapes\*** are designed for use in semiconductor as well as critical environments.

These adhesive tapes are easy to take from the reel, with only a minimal static charge arising. Their adaptability to different surfaces is outstanding.

#### These adhesive tapes

- are easy and residue free to remove
- have an extremely low content of washable metals, and are therefore no contamination risk
- have extremely low particle emission



<sup>\*</sup> Designation of the adhesive tapes according to their usual use. Of course, other areas or types of application, etc. are also possible.

# Adhesive tapes for ESD areas and the use at high temperatures

**ESD & High Temperature Tapes** 



# SAFEGUARDED ESD WORK AREA





Short description	Colour	Width	PU per bag	Box- quantity	Manufacturer code	Art. No.
Anti-Static Polyester Film Based Tape		0.5"	12 rolls	48 rolls	2149	9202149
antistatic coated		1"	6 rolls	24 rolls		
– medium adhesion force –		other s	izes may be available	e on request		
Anti-Static Cleanroom Vinyl	$\bigcirc$ $\bullet$ $\bullet$ $\bullet$	0.5"	8 rolls	32 rolls	2286	9202286
Marking Tape (writable)		1"	6 rolls	24 rolls		
– low adhesion force –		other siz	zes may be available	on request		
UltraTape Anti-Static Cleanroom Marking Tape w/Printed ESD Symbol vinyl laminated with polyethylene	$\circ$	0.75"	8 rolls	32 rolls	2265	9202265
		2"	6 rolls	24 rolls		
– low adhesion force –						
- low adilesion force -		other sizes a	nd colours may be av			
High Temperature Polyester	<b>(</b> )	0.75"	8 rolls	32 rolls	6570	9206570
Cleanroom Tape (with silicone adhesive)						
– medium adhesion force –		other sizes may be available on request				
Anti-Static Polyimide Cleanroom Tape		1"	-	36 rolls	2157	9202157
with Silicone Adhesive						
– medium adhesion force –		other s	izes may be available	on request		
	blue green er	ed <mark>yel</mark>	low bronz	ze		



The **Anti-Static Tapes** and **ESD Tapes** are specially treated to create an antistatic surface so that only a very low electrical voltage is generated when the tapes are unrolled. These tapes are specially developed for use in sensitive areas and are used, for example, for sealing antistatic bags, packaging electronic or medical components, precision equipment, etc. The tapes feature good durability.

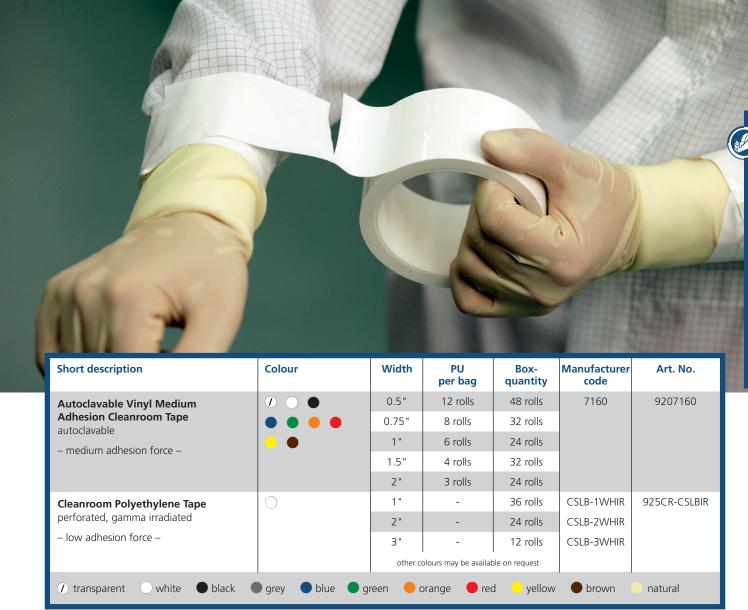
They are characterised by good durability and some are writable. Some are also conditionally solvent resistant.

Some of the High Temperature Tapes can withstand temperatures of up to 260 °C. Some are also antistatic or autoclavable and some are also conditionally resistant to chemicals.

# ADHESIVE TAPES & LABELS

# Adhesive tapes for the medical and pharmaceutical industries

## **Medical & Pharmaceutical Tapes**



The **Medical and Pharmaceutical Tapes\*** are designed to satisfy the strict requirements of these industries. All tapes can be irradiated, hence find applications in the non-sterile and sterile environments.

A typical usage is the **fixation of the glove shaft to the sleeve of the clean-room garment** to avoid slipping.

The tapes are available in several widths, as well as perforated versions, to facilitate as simple handling as possible.

We also offer **Crepe Tapes with autoclavable steam indicators** which discolour at +134 °C and hence indicate successful autoclaving.

<sup>\*</sup> Designation of the adhesive tapes according to their usual use. Of course, other areas or types of application, etc. are also possible.

# **Special adhesive tapes**

# Adhesive hazard warning and safety tapes (Environmental Health & Safety)



Short description	Colour	Width	PU per bag	Box- quantity	Manufacturer code	Art. No.
Striped Overlaminated Floor		0.5"	12 rolls	48 rolls	1165	9201165
Marking Cleanroom Tape vinyl with polyester coating		1"	6 rolls	48 rolls		
– low adhesion force –		1.5"	4 rolls	32 rolls		
		2"	3 rolls	24 rolls		
		3"	2 rolls	16 rolls		
Solid Color Overlaminated Floor	0	0.5"	12 rolls	48 rolls	1186	9201186
Marking Tape calendered vinyl  – medium adhesion force –	• • •	1"	6 rolls	48 rolls		
		2"	3 rolls	24 rolls		
		3"	2 rolls	16 rolls		
<ul> <li>white</li></ul>						

**Product specific** characteristics see overview matrix page 180-181.

The Environmental Health & Safety Tapes\* are specially designed to protect employees and make workplaces safer.

With two-coloured laminated tape, critical areas within a cleanroom can be clearly marked. With floor marking tapes, walkways and other floor areas within a cleanroom can be clearly marked.

In order to meet the wide variety of applications, we offer special cleanroom tapes that can be customized to meet individual requirements, e.g. for packaging, core, backing paper and adhesive.

Furthermore, perforation and gamma irradiation are possible on request!

# Adhesive tapes for surface protection (Surface Protection)/ Double-sided adhesive tapes



Short description	Colour	Width	PU per bag	Box- quantity	Manufacturer code	Art. No.
PVC Surface Protection Low Adhesion	dark blue	0.5"	12 rolls	48 rolls	1310	9201310
Cleanroom Tape PVC = polyvinyl chloride	coloured	0.75"	8 rolls	64 rolls		
– low adhesion force –		1"	6 rolls	48 rolls		
- low auriesion force -		1.5"	4 rolls	32 rolls		
		2"	3 rolls	24 rolls		
		3"	2 rolls	16 rolls		
		4"	1 roll	12 rolls		
Double-Sided Polyester Permanent	① transparent	0.5"	1 roll	48 rolls	1510	9201510
Adhesion Cleanroom Tape with Liner	on red carrier film	0.75"	1 roll	32 rolls		
– permanently adhesive –		1"	1 roll	24 rolls		
		2"	1 roll	12 rolls		
Double-Sided Polyester Removable	// transparent	0.5"	1 roll	48 rolls	1520	9201520
Adhesion Cleanroom Tape	without carrier film	0.75"	1 roll	32 rolls		
– removable –		1"	1 roll	24 rolls		
		2"	1 roll	12 rolls		

No adequate solution for your application?

On request, we will be happy to advise you and send you more detailed documents.

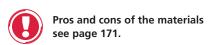
<sup>\*</sup> Designation of the adhesive tapes according to their usual use. Of course, other areas or types of application, etc. are also possible.

# **Overview matrix**

			Manufacturer	
Chapter	Usual application**	Art. No.	code	Material
10.2 10.3	Construction Semiconductor	9201153	1153	Polyethylene
10.2	Construction	9201154	1154	Polyethylene
10.2	Construction	9201160	1160	Vinyl
10.2	Construction	9201164	1164	Polyolefin
10.2 10.6	Construction Environmental Health & Safety	9201165	1165	Vinyl with polyester coating
10.2	Construction	925CR100PC	CR100PC	Vinyl
10.3	Semiconductor	9201110	1110	Polyethylene
10.3	Semiconductor	9201112	1112	Polyethylene
10.3	Semiconductor	9201114	1114	Polyethylene
10.3	Semiconductor	925PCX	PCX-1WH	Polyethylene
10.4	ESD & High Temperature	9202149	2149	Polyester
10.4	ESD & High Temperature	9202286	2286	Vinyl
10.4	ESD & High Temperature	9202265	2265	Vinyl laminated with polyethylene
10.4	ESD & High Temperature	9206570	6570	Polyester
10.4	ESD & High Temperature	9202157	2157	Polyimid
10.5	Medical & Pharmaceutical	9207160	7160	Vinyl
10.5	Medical & Pharmaceutical	925CR-CSLBIR	CSLBIR	Polyethylene
10.6	Environmental Health & Safety	9201186	1186	Calendered vinyl
10.6	Surface Predection	9201310	1310	Polyvinyl chlorid
10.6	Double-sided	9201510	1510	Polyester
10.6	Double-sided	9201520	1520	Polyester

<sup>\*</sup> Designation of the adhesive tapes according to their usual use. Of course, other areas or types of application, etc. are also possible.

Cleanroom adhesive tapes are deliverable in the following sizes as standard: 0.5" / 0.75" / 1" / 1.5" / 2" and additionally 3" and 4". Customer specific widths are available on request.



		Adhesive on steel		<b>-1</b>		
Adhesive	Material thickness	180° tension (N/25 mm )	Optimal working temperature	Elongation at break	Tensile strength	Length
Rubber	114.3 μm	1.701 kg/25 mm	-29 to +80 °C	80%	8.16 kg/in	36 yd (~ 32.9 m)
Rubber	177.8 μm	0.709 kg/25 mm	0 to +71 °C	80%	9.07 kg/in	36 yd (~ 32.9 m)
Rubber	127 µm	0.501 kg/25 mm	-29 to +80 °C	160%	5.9 kg/in	36 yd (~ 32.9 m)
Acryl	104.14 μm +/- 12.70 μm	1.021 kg/25 mm	-40 to +88 °C	100%	14.97 kg/in	60 yd (~ 54.9 m)
Rubber	228.6 μm +/- 22.86 μm	0.593 kg/25 mm	-29 to +60 °C	200%	14.97 kg/in	18 yd (~ 16.5 m)
Rubber	127 µm	0.51 kg/width	room temperature	180%	5.9 kg/in	36 yd (~ 32.9 m)
Acryl	114.3 μm	1.417 kg/25 mm	-40 to +88 °C	400%	4.99 kg/in	36 yd (~ 32.9 m)
Acryl	114.3 μm	0.850 kg/25 mm	-40 to +88 °C	400%	4.99 kg/in	36 yd (~ 32.9 m)
Acryl	114.3 μm	0.340 kg/25 mm	-40 to +88 °C	450%	5.44 kg/in	36 yd (~ 32.9 m)
Acryl	139.7 μm	1.588 kg/25 mm	-40 to +88 °C	400%	4.99 kg/in	36 yd (~ 32.9 m)
Acryl	25 μm + 30.48 μm	0.765 kg/25 mm	-12 to +65 °C	80 – 120%	10.432 kg/in	72 yd (~ 65.8 m)
Rubber	101.6 μm + 25.4 μm	0.482 kg/25 mm	0 to +80 °C	≥ 80%	not specified	36 yd (~ 32.9 m)
Rubber	127 μm + 25.4 μm	0.482 kg/25 mm	0 to +80 °C	≥ 80%	not specified	36 yd (~ 32.9 m)
Silikon	25.4 μm + 38.1 μm	0.992 kg/25 mm	-56 to +204 °C	120%	10.89 kg/in	72 yd (~ 65.8 m)
Silikon	25.4 μm +/- 6.35 μm	0.709 kg/25 mm	-40 to +260 °C	> 60%	14.51 kg/in	36 yd (~ 32.9 m)
Rubber	127 µm	0.624 kg/25 mm	Colour change/indicator dot at +134 °C (approx. 5 min)	100%	5.9 kg/in	36 yd (~ 32.9 m)
Acryl	139.7 μm	1.588 kg/width	+4 to +88 °C	400%	4.99 kg/width	36 yd (~ 32.9 m)
Acryl	111.76 μm +/- 27.94 μm	1.134 kg/25 mm	-23 to +93 °C	not applicable	not applicable	18 yd (~ 16.5 m)
Acryl	76.2 μm	0.142 kg/25 mm	+15 to +38 °C	200%	6.49 kg/in	55 yd (~ 50.3 m)
Acryl	203.2 μm +/- 17.78 μm	2.551 kg/25 mm	-23 to +80 °C	100%	6.35 kg/in	36 yd (~ 32.9 m)
Acryl	81.28 μm +/- 5.08 μm	0.624 kg/25 mm	-23 to +71 °C	100%	4.99 kg/in	36 yd (~ 32.9 m)



Many of our adhesive tapes are available in different versions, e.g.

- gamma irradiated
- perforated
- triple packed

On request, we will be happy to advise you and send you more detailed documents.



# **Labels for cleanrooms**



In addition to cleanroom-compatible adhesive tapes, we also offer a wide range of cleanroom-compatible labels for various purposes and in a variety of designs.

The labels as well as the carrier films and roll cores are made of 100% synthetic materials and are therefore ideal for use in critical areas. They can be specifically adapted to customer requirements, can be labeled or printed or can be supplied already pre-printed.

Furthermore, we also offer appropriate cleanroom compatible thermal printers for printing the labels.

Please contact us for further information!



#### Thermo direct labels

The typical areas of application for these labels are industrial cleanrooms and hospital laboratories.

- low in particles, residue-free, low outgassing
- multitude of synthetic upper materials and adhesives
- printed or blank
- customized solutions including special shapes, sizes, roll diameters and core sizes



#### Thermo transfer labels

The labels, made of high-performance films and industrially suitable adhesives, have a long service life. However, they are also suitable for short-term use at any time.

- low in particles, residue-free, low outgassing
- multitude of synthetic upper materials and adhesives
- printed or blank
- customized solutions including special shapes, sizes, roll diameters and core sizes



#### Medicine labels

The labels are made of high-performance materials and are certified especially for use in the medical and pharmaceutical industry. Typical applications are bags, vials, syringes, bottles, tubes and equipment.

Some features of the labels are:

- high sterilization temperature possible
- extremely cold temperatures (cryogenic) possible
- easily removable
- flexible surfaces









## Write and seal labels

The self-laminating labels are specially designed for applications where handwritten information needs to be protected. No blurring thanks to the abrasion-resistant surface.

# **Safety labels**

Safety labels for various applications, e.g. for the inspection of closed bags, sealing of machines/devices or for quality control.

Special punching and self-destruction slits make it impossible to remove the labels intact. When trying to remove a label, it devalues itself and the word "opened" appears instead of the colour film.

## **Barcode labels**

Customer specific 2D barcode labels that meet or exceed the industry standard for scanability to identify your existing inventory or produced goods.

## Other labels







#### Furthermore, we offer a wide range of labels, individually adapted to your specific requirements, for example

- die-cut
- suitable for low temperatures
- chemically stable
- abrasion-proof
- waterproof/moisture resistant
- heat resistant
- custom shapes
- with special adhesives
- consecutively numbered with and without barcode
- with additional protective coating
- UV-resistant

# Dispensers for cleanroom adhesive tapes



Of course we also offer for our adhesive tapes cleanroom suitable dispensers for different core diameters, here you will find a short overview:



Description	Art. No.
<b>Stainless steel dispenser</b> for adhesive tapes with maximum 2" width and 220 yd length for rolls with 3" core diameter	24100
<b>Powder-coated dispenser (blue)</b> for adhesive tapes with maximum 2" width and 220 yd length for rolls with 3" core diameter	24101
<b>4 x stainless steel dispenser, powder-coated (blue)</b> for adhesive tapes with maximum 1" width and 220 yd length for rolls with 3" core diameter	24102



1" = 2.54 cm 2" = 5.08 cm 3" = 7.62 cm 220 yards ≈ 201.17 m

# **Product recommendations** referring to cleanroom classes

Cleanrooms and associated controlled environments – Part 1 Classification of air cleanliness by particle concentration

Hygiene zones (microbiological controlled areas) according to GMP

Article

low dust

All articles of the product classifications:

Adhesive tapes for construction and colour markings

Adhesive tapes for semiconductor industry

Adhesive tapes for ESD areas and the use at high temperatures

Adhesive tapes for the medical and pharmaceutical industries

Adhesive hazard warning and safety tapes

Adhesive tapes for surface protection

**Double-sided adhesive tapes** 

Labels for cleanrooms

Dispensers for cleanroom adhesive tapes

#### **EXPLANATION**

Cleanroom compatible adhesive tapes and labels can basically be recommended for all cleanroom classes from ISO 5 to ISO 9 (or low-dust rooms). Therefore, we have refrained from listing a corresponding table here – as in other chapters.

The same applies, of course, to hygiene zones A to D, if the articles have been sterilised in advance accordingly for the A/B zones.



