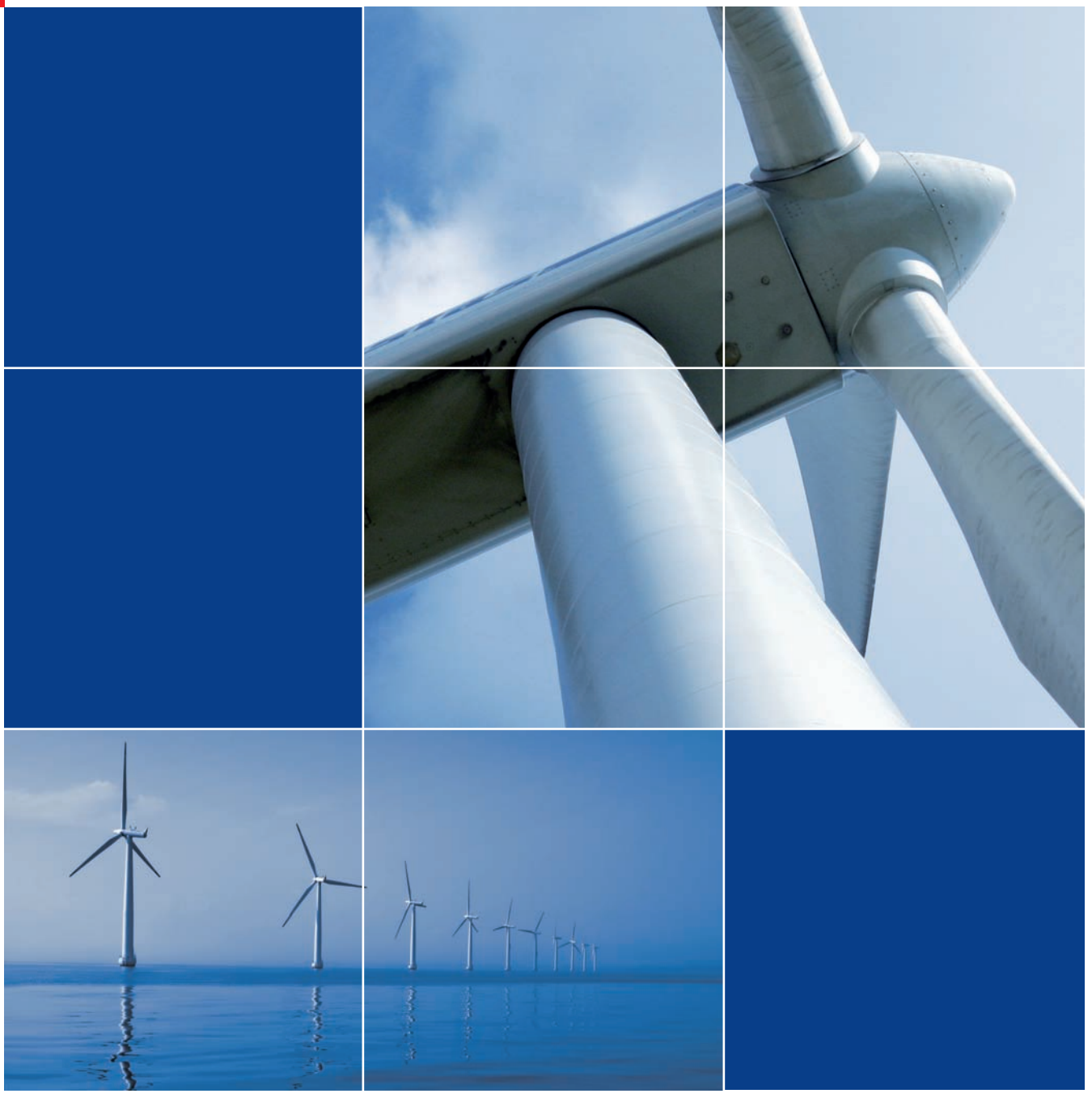
tesa® High Performance Tapes for Wind Energy

tesa® Solutions for Wind Energy Industries

ASSORTMENT FOLDER



Benefit from our experience – adhesive tape solutions for wind energy

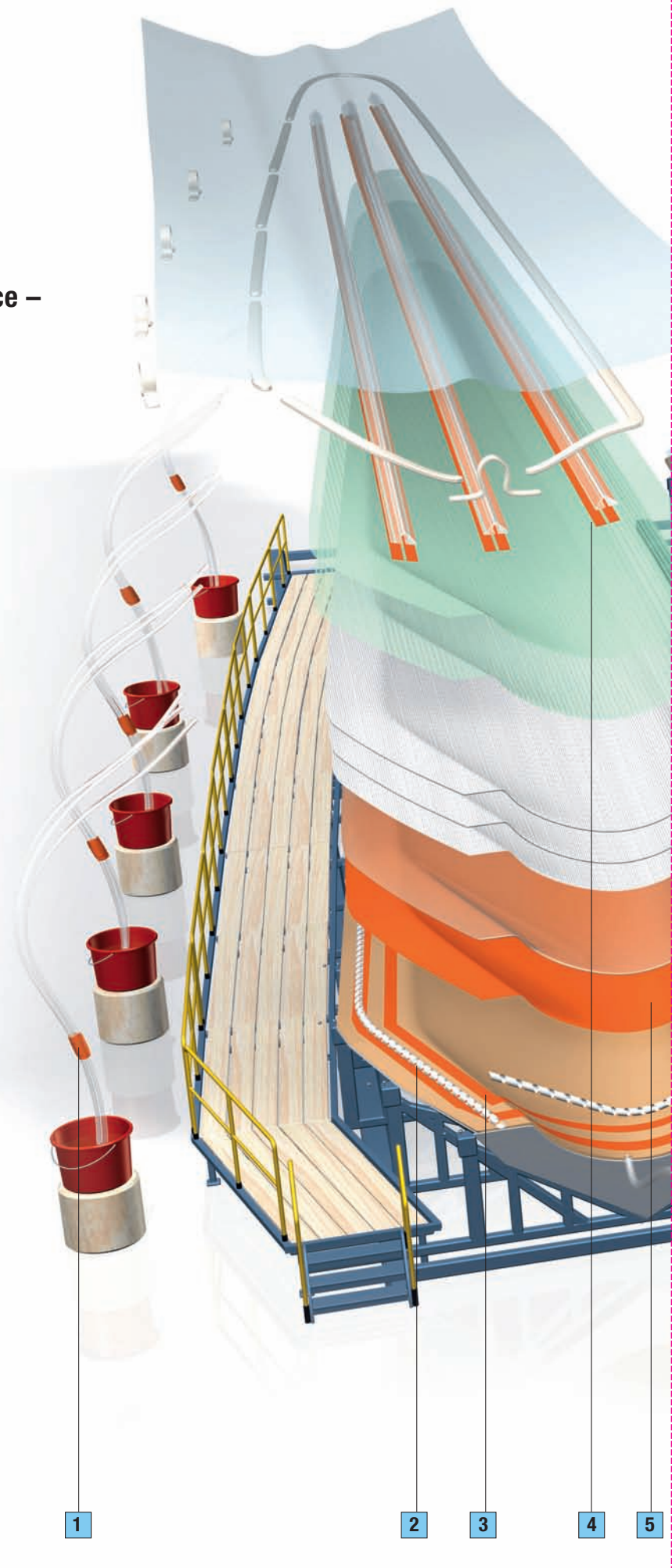
Based on more than 100 years of experience in the production of self-adhesive tapes and related products, tesa is one of the leading adhesive tape producers world-wide.

tesa® tapes are designed to meet the demanding requirements in a variety of different applications and industries and are the preferred solution for design engineers all over the world.

tesa is committed to understand customers´ processes by engaging with our clients and exchanging experiences with the leading OEMs and Tier manufacturers around the globe. We continuously improve our solutions, developing new products that fulfill your requirements even better – helping you to increase your throughput and ease of assembly. This helps you to further reduce application costs with quality products and improve your efficiency and profitability.

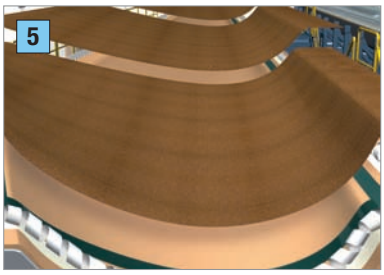
Our product assortment for wind energy offers a breath of fresh air and innovation to the industry, all detailed within this folder.

To complement our products, tesa´s technical support provides you valuable expertise and selects the best solution for your application.



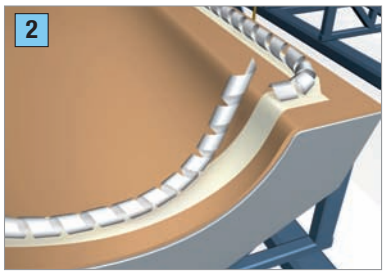
Explanation of applications and benefits

There are many applications for tesa® tapes during the manufacturing of windblades. The performance of tesa® products, with easy and clean handling, provide a lot of advantages to the user and support the efficiency of the whole production process.



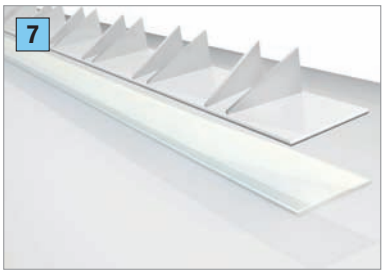
1 tesa® 4613:
single-sided multipurpose PE laminated cloth backing with natural rubber

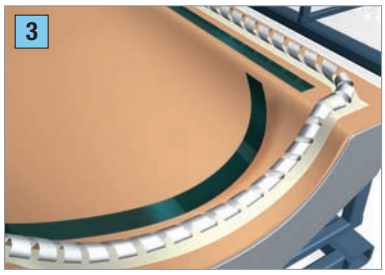
- Application: Bundling of tubes, short term holding of films where temperature and residues are not crucial.
- Benefit: Aggressive high tack even on rough surfaces, easy to tear.



2 tesa® 51960:
double-sided fabric reinforced PP backing and acrylic adhesive

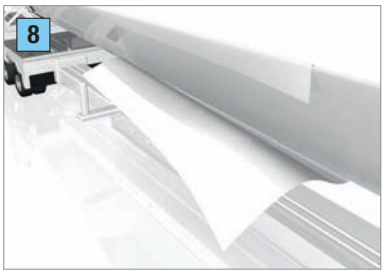
- Application: Temporary holding of vacuum spirals around the mould.
- Benefit: Residue free removable, high coating weight to the spiral side prevents lifting off during RIM preparation.

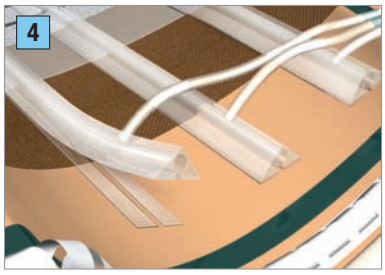




3 tesa® 61122 / tesa® 61123:
single-sided PET backing and silicone adhesive

- Application: Temporary masking during resin infusion. Easy mould cleaning from flashed resin after resin infusion.
- Benefit: Excellent adhesion on low surface energy products; differing in thickness leads to either higher conformability or greater tensile strength.





4 tesa® 4970 / tesa® 4914:
double-sided non woven and acrylic adhesive

- Application: Fastening of resin infusion profiles onto the resin distribution net; tesa® 4914 for more crucial net surfaces. Enables faster assembly and more homogenous resin distribution.
- Benefit: Excellent positioning of resin profiles. Prevents contamination of later blade structure with natural rubber.

5 **tesa® 4810:**
single-sided PTFE laminated glass cloth tape with silicone adhesive

- Application: Self-adhesive film for large area surface masking for permanent anti-stick surface inside the mould.
- Benefit: Once applied speeds up time-consuming mould preparation with release waxes or liquids.

6 **tesa® 54994:**
single-sided PU film with acrylic adhesive

- Application: Permanent protection of leading edge wind generator blades.
- Benefit: Longer protection of the most stressed area of the rotor blade. Clear outdoor grade. Will not stain, lift or dry out. Approved by major OEMs and Tier1s.

7 **tesa® 7070 ACX^{plus}:**
double-sided acrylic foam tape with acrylic adhesive

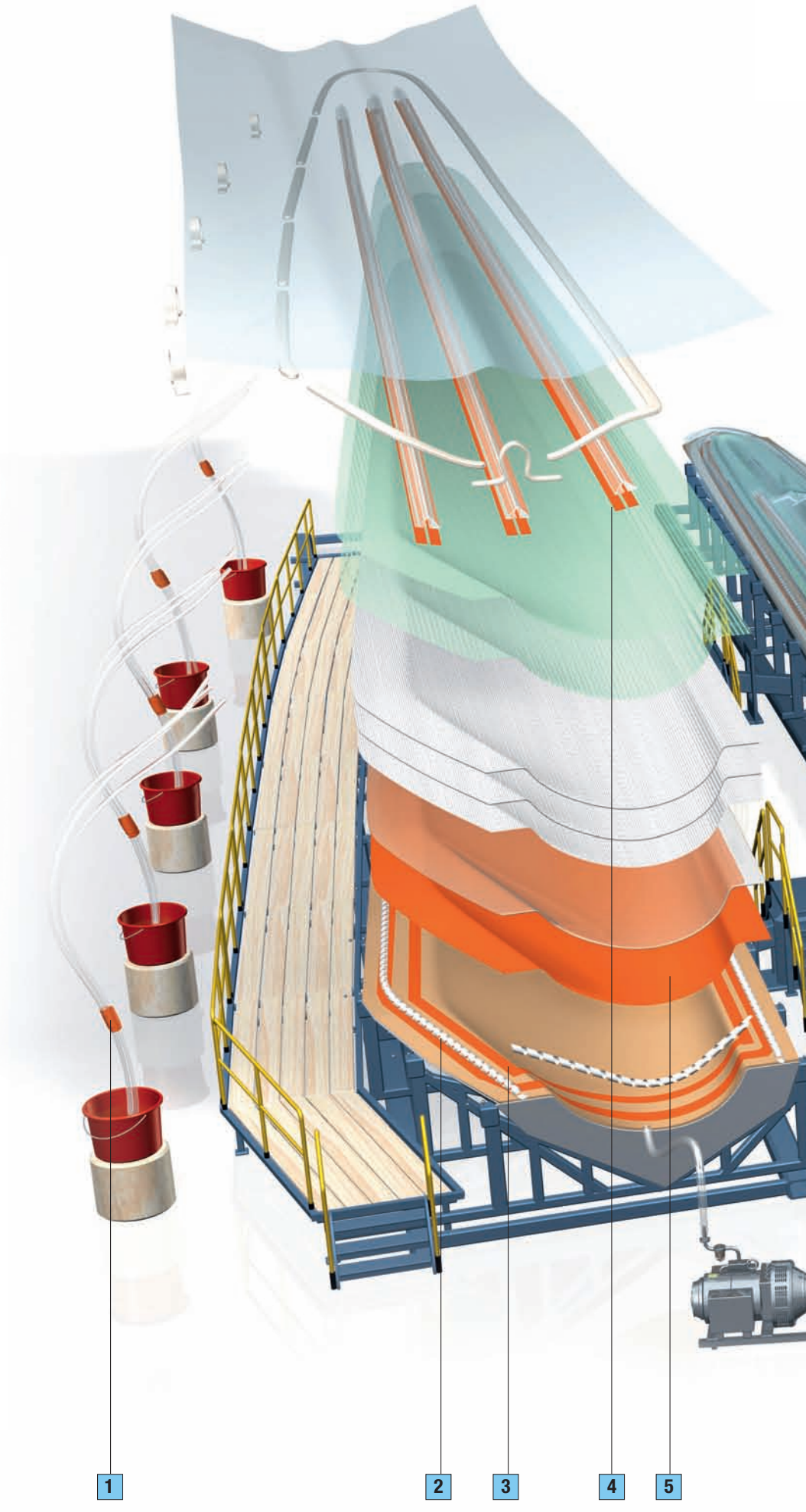
- Application: Permanent mounting of air distributaries (gel coat to plastic or metal).
- Benefit: Faster process time, no pot-life to be considered vs. liquid glue, available as die-cut. For permanent bonding solutions when ever thermal elongation needs to be considered.

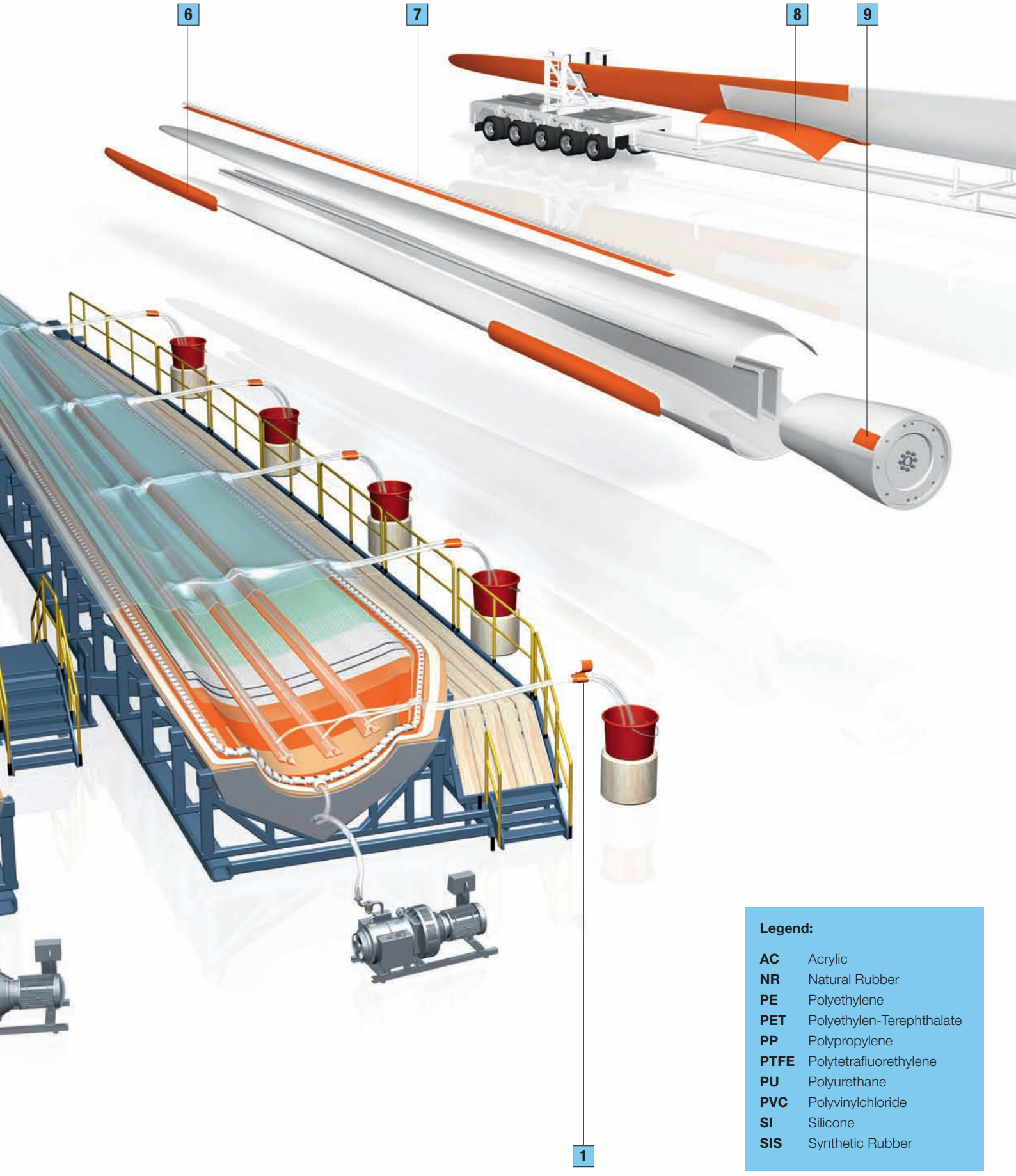
8 **tesa® 50530:**
single-sided polyolefinic film

- Application: Surface protection during outdoor storage and transportation.
- Benefit: Offers cost savings due to reduction in rectification and final repair.

9 **tesa® 6930:**
single-sided acrylic film

- Application: Permanent marking of lot numbers enables tracking of rotor blades.
- Benefit: Flexible marking and die-cutting. Withstands heat and abrasion.





Legend:

AC	Acrylic
NR	Natural Rubber
PE	Polyethylene
PET	Polyethylen-Terephthalate
PP	Polypropylene
PTFE	Polytetrafluorethylene
PU	Polyurethane
PVC	Polyvinylchloride
SI	Silicone
SIS	Synthetic Rubber

Additional tapes

Mould Preparation

tesa® 51010:
single-sided high load tensilized PP backing and SIS adhesive

- Application: Peels off gel coat for visual quality inspection before final assembly (“gel coat window opener”).
- Benefit: Featuring the highest tensile strength available, high security during peel off.

tesa® 51108:
single-sided PET backing and NR adhesive

- Application: Marking positions inside the mould before lay-up.
- Benefit: Marking long, straight lines where conformability is not requested. Reliable positioning of glass mats.

tesa® 4576:
single-sided PET non-woven and AC adhesive

- Application: Vacuum needs to be created, but stickiness is a must have.
- Benefit: High air permeability due to specific design, although tape is coated.

Blade Manufacturing and Finishing

tesa® 4985:
double-sided transfer-tape and AC adhesive

- Application: Permanent or temporary fastening where thickness is crucial.
- Benefit: Excellent conformability (“adhesive from the roll”)

tesa® 50605:
double-sided non-woven and AC adhesive

- Application: Glass layer fastening at outer side of the mould.
- Benefit: High tack, high shear, and temperature resistance. Adhesive for mulation ensures good bond, even on rough surfaces. Easy to tear by hand.

tesa® 4341 / tesa®4317:
single-sided paper backing and NR adhesive

- Application: Masking during paint.
- Benefit: tesa® 4317 slightly creped backing or tesa® 4341 flat back paper. Resistant to wet sanding. Paint sand fillers adhere well to the backing.

tesa® 4174:
single-sided PVC backing and thermosetting NR adhesive

- Application: Masking tape during sealing of PU abrasion protection film.
- Benefit: Residue free removable, good conformability to multidimensional surfaces

tesa® 4434:
single-sided paper tape and NR adhesive

- Application: Heavy-duty paper masking for protecting of material during grinding in workshops.
- Benefit: Special masking tape with extra strong, thick and resistant paper backing.

Nacelle Manufacturing and Finishing

tesa® 4688:
single-sided PE coated cloth tape and NR adhesive

- Application: Less demanding temporary multipurpose repairing solutions.
- Benefit: Easy to tear by hand, high initial tack, resistance to humidity and abrasion.

tesa® 4163:
single-sided soft PVC film and AC adhesive

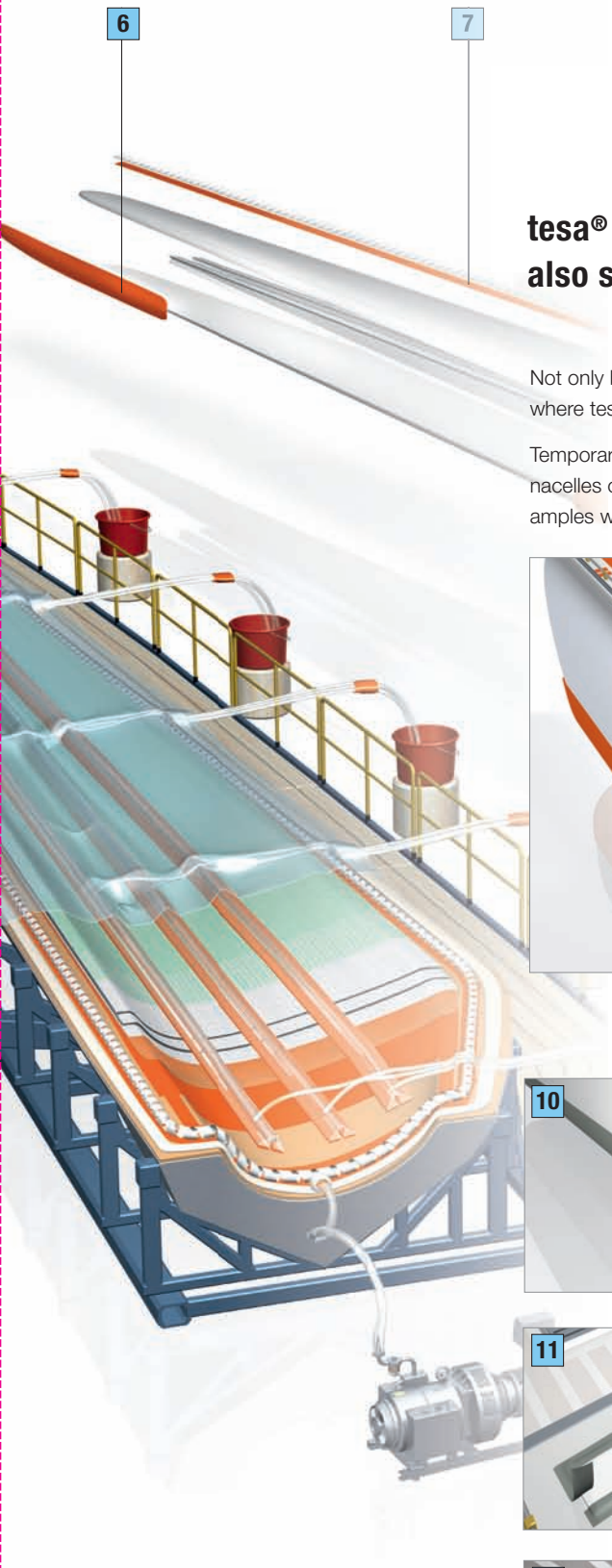
- Application: Insulation, marking, splicing, bundling, etc.
- Benefit: Good film flexibility. Acrylic adhesive make it ideal for permanent application. Conforms to US safety standard 302.

tesa® 4957:
double-sided PE-foam tape with AC adhesive

- Application: General mounting applications, shelf edge labels, cable channels.
- Benefit: Highly conformable PE-foam backing, fully outdoor suitable: UV, water and ageing resistant. Very good cold shock absorption.

tesa® 50565:
single-sided aluminum foil and AC adhesive

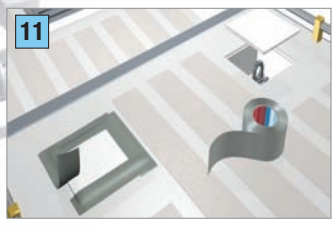
- Application: Heat or vapor shielding in- and outdoor.
- Benefit: Very low vapor transmission rate. Durable backing and adhesive provides long serviceable outdoor life. Also available with electrical conductive adhesive.

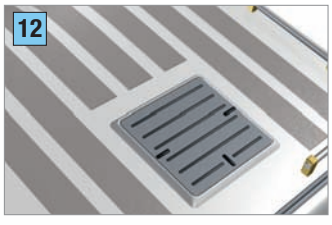


tesa® tapes – also suitable for outdoor applications

Not only blade but also nacelle and tower manufacturing are areas where tesa tapes are being used around the globe.

Temporary sealing of parts to avoid water trapping during storage of nacelles or permanent safety solutions are only a few application examples where tesa provides valuable solutions to our wind customers.





10 **11** **tesa® 4657: single-sided premium coated cloth tape with thermosetting natural rubber**

- Application: Temporarily sealing nacelle cleaving before final assembly.
- Benefit: Balanced adhesion level for different substrates with residue free removability. Withstands outdoor environment up to six months.

12 **tesa® 60950: single-sided PVC backing sanded grid and acrylic adhesive**

- Application: Antislip surface prevents from skidding inside and on top of the nacelle.
- Benefit: Very good adhesion on demanding surfaces. Saltwater resistant. No shrinkage after application.

Technical Data

Reference	Backing	Colour	Total Thickness [µm - mils]	Adhesion to Steel [N/10mm - oz/in]	Tensile Strength [N/10mm - lbs/in]	Adhesive
tesa® 4657	Acrylic Coated Cloth	black, gray	290 / 11.4	4,6 / 42.0	100,0 / 57.0	NR
tesa® 60950	PVC Film	black	810 / 31.9	10,0 / 91.2	253,0 / 144.2	AC
tesa® 4613	PE Laminated Cloth	black, silver	180 / 7.1	4,1 / 37.4	34,0 / 19.4	NR
tesa® 51960	Fabric Reinforced Cloth	white	250 / 9.8	4,7 / 42.9	30,0 / 17.1	AC
tesa® 61122	Polyester	green	80 / 3.1	4,0 / 36.5	>90,0 / 51.3	SI
tesa® 61123	Polyester	blue	55 / 2.2	3,0 / 27.4	>40,0 / 22.8	SI
tesa® 4970	PVC Film	white	240 / 9.4	13,5 / 123.1	38,3 / 21.8	AC
tesa® 4914	Non Woven	translucent	200 / 7.9	7,0 / 63.8	8,0 / 4.6	AC
tesa® 4810	PTFE Laminated Glass Cloth	beige	223 / 6.1	4,2 / 38.3	246,0 / 140.2	SI
tesa® 54994	PU Film	transparent	360 / 14.2	7,2 / 64.9	54,4 / 95.8	AC
tesa® 7070*	Acrylic Foam	white	1000 / 39.4	36,0** / 328.0	3,8 / 6.6	AC
tesa® 50530	Polyolefinic Film	white	80 / 3.1	1,0 / 9.1	22,0 / 12.5	EVA
tesa® 6930	Acrylic Film	black, silver, white	145 / 5.7	1,8 / 16.4	- / -	AC
tesa® 51010	TPP	silver matt	127 / 5.0	7,0 / 63.8	400,0 / 228.0	SIS
tesa® 51108	PET	beige	54 / 2.1	3,3 / 30.1	47,0 / 82.5	NR
tesa® 4576	PET / Non Woven	chamoise	115 / 4.5	1,0 / 9.1	12,0 / 6.8	AC
tesa® 4985	None	transparent	50 / 2.0	8,0 / 73.0	- / -	AC
tesa® 50605	Non-Woven	translucent	90 / 3.5	3,2 / 29.2	4,2 / 7.3	AC
tesa® 4341	Slightly-creped Paper	brown	170 / 6.7	4,7 / 42.9	53,0 / 30.2	NR
tesa® 4317	Slightly-creped Paper	beige	140 / 5.5	3,3 / 30.1	38,0 / 21.7	NR
tesa® 50565	Aluminium Foil	aluminium	90 / 3.5	6,0 / 54.7	35,0 / 20.0	AC
tesa® 4174	PVC Film	chamoise	110 / 4.3	3,4 / 31.0	25,0 / 14.3	NR
tesa® 4434	Flat Paper	brown	670 / 26.4	2,7 / 24.6	180,0 / 102.6	NR
tesa® 4688	PE Extruded Cloth	blue, green, brown, yellow, red, white, silver, black	260 / 10.2	4,7 / 42.9	52,0 / 29.6	NR
tesa® 4163	Soft PVC	blue, yellow, red, white, silver, black	130 / 5.1	1,8 / 16.4	30,0 / 17.1	AC
tesa® 4957	PE Foam	black, white	1100 / 43.3	4,0 / 36.5	6,0 / 3.4	AC

* preliminary data ** Adhesion after 3 days

Legend: AC = Acrylic NR = Natural Rubber PE = Polyethylene PET = Polyethylen-Terephthalate PP = Polypropylene PTFE = Polytetrafluorethylene PU = Polyurethane PVC = Polyvinylchloride SI = Silicone SIS = Synthetic Rubber

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