ACX^plus Automotive – Webinar for Convertors

Chetan Busireddy & Martin Geelink – Sept 2022

Event Speakers

Chetan Busireddy
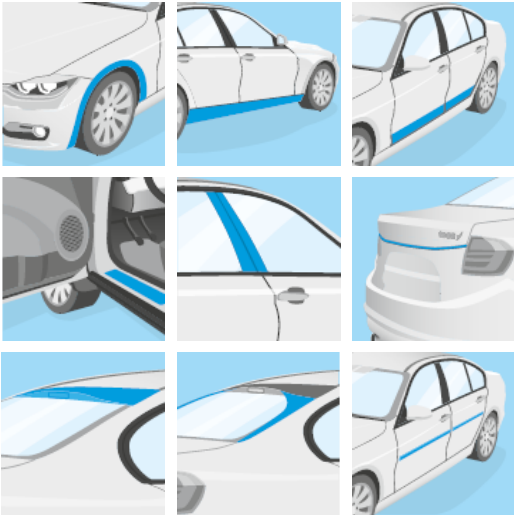Market Segment Manager
Europe`

Martin Geelink
Application Solution Engineer

ACX^{plus} Webinar for Convertors

Agenda

1	Application Overview
2	ACX^{plus} Assortment
3	Product Highlights
	(78XX Black Line, 773xx ACXplus, 778xx Primerless Line)
4	Assortment Accessories
5	Customer Solution Center
6	Q&A

Exterior Applications

Connected Interior / ePowertrain

Attachment Parts

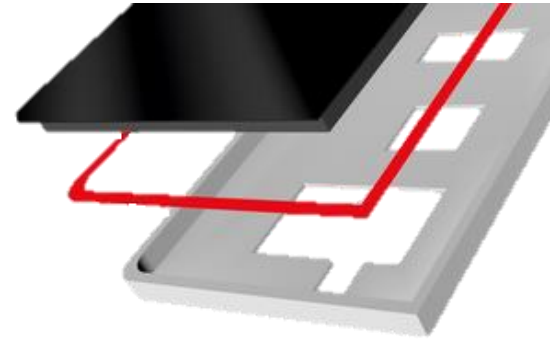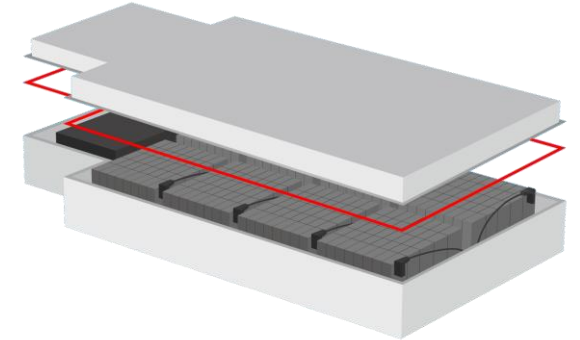### Seals

Display (Frame) Mounting

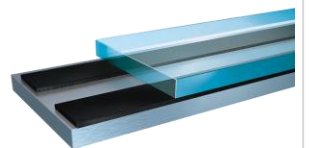### Battery Pack Sealing

Further Applications

Glazing

ADAS

Hole Covering

Industrial Mounting

ACX^plus Assortment
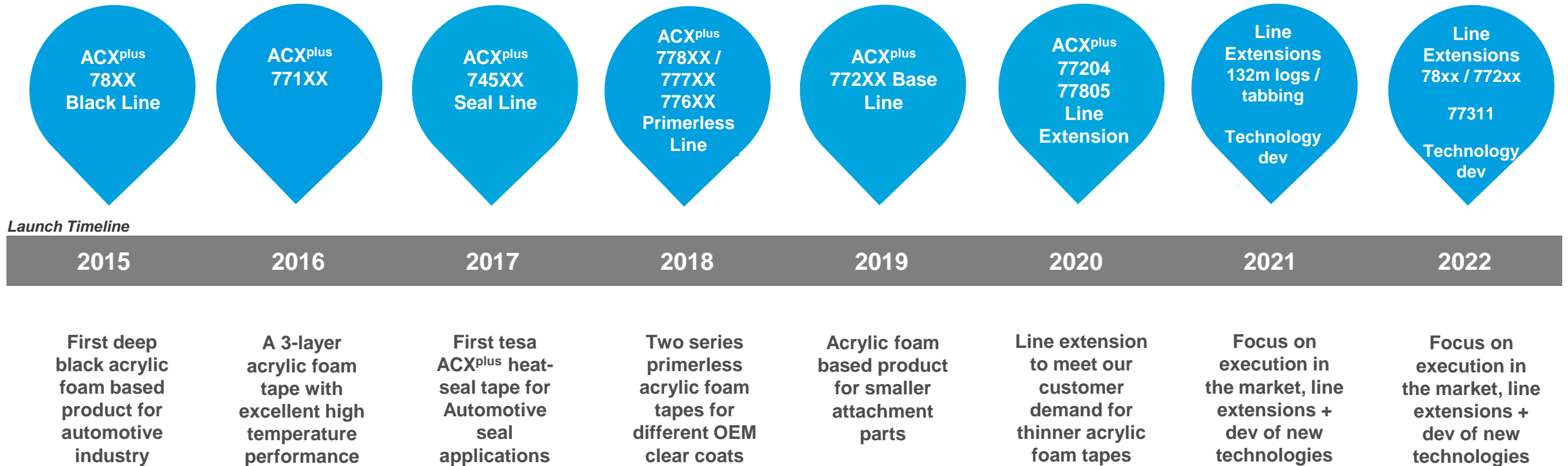
ACXplus Assortment

Over the last 7 years, our exterior product portfolio is growing rapidly to meet the demands from both OEM and OES, and supports our customers for more efficient and secured process!

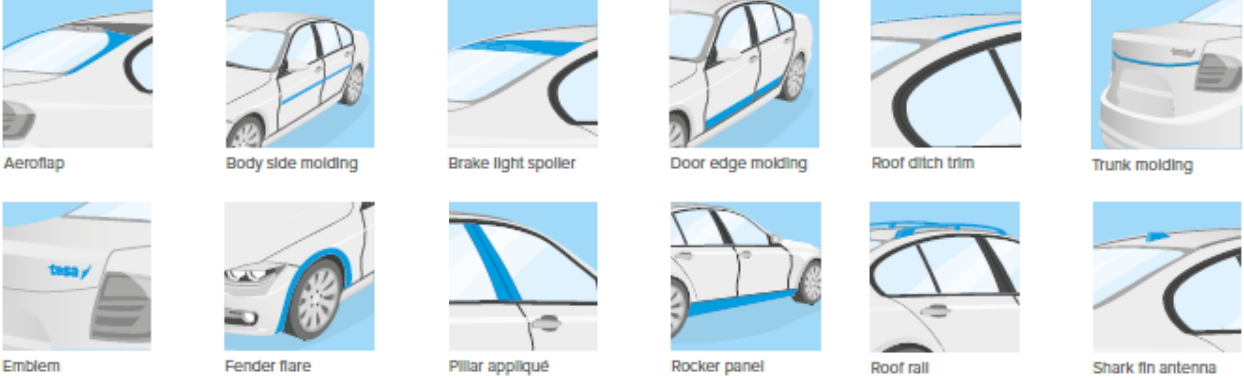|							
ACXplus 78XX Black Line	ACXplus 771XX	ACXplus 745XX Seal Line	ACXplus 778XX / 777XX 776XX Primerless Line	ACXplus 772XX Base Line	ACXplus 77204 77805 Line Extension	Line Extensions 132m logs / tabbing Technology dev	Line Extensions 78xx / 772xx 77311 Technology dev

Launch Timeline

2015	2016	2017	2018	2019	2020	2021	2022
First deep black acrylic foam based product for automotive industry	A 3-layer acrylic foam tape with excellent high temperature performance	First tesa ACXplus heat-seal tape for Automotive seal applications	Two series primerless acrylic foam tapes for different OEM clear coats	Acrylic foam based product for smaller attachment parts	Line extension to meet our customer demand for thinner acrylic foam tapes	Focus on execution in the market, line extensions + dev of new technologies	Focus on execution in the market, line extensions + dev of new technologies

ACX^{plus} Assortment
Our acrylic foam ACX^{plus} overview

Product Family	tesa® ACX^{plus} 772XX Base Line	tesa® ACX^{plus} 78XX Black Line	tesa® ACX^{plus} 771XX	tesa® ACX^{plus} 773XX	tesa® ACX^{plus} 776XX	tesa® ACX^{plus} 777XX Primerless Line	tesa® ACX^{plus} 778XX Primerless Line	tesa® ACX^{plus} 745XX Seal Line
Product design	Single layer	Single layer	Three layers	Two layers	Two layers	Two layers	Three layers	Two layers
Construction	Pure acrylic foam	Modified acrylic foam	Pure acrylic foam core with tackified acrylic adhesive	Pure acrylic foam core with covered side LSE adhesive	Pure acrylic foam core with covered side LSE adhesive	Pure acrylic foam core with open side LSE adhesive	Pure acrylic foam core with both sides LSE adhesive	Modified acrylic foam with heat-activated layer
Color	Gray	Deep black	Black	Gray	Gray	Gray	Gray	Deep black
Thickness [mm] 0.4	tesa® 77204							
0.5		tesa® 7805					tesa® 77805	
0.6	tesa® 77206							
0.8	tesa® 77208	tesa® 7808	tesa® 77108	(tesa® 77308)	tesa® 77608	tesa® 77708	tesa® 77808	tesa® 74508
1.0	tesa® 77210							
1.1		tesa® 7811		tesa® 77311	tesa® 77611	tesa® 77711	tesa® 77811	
1.2	tesa® 77212	tesa® 7812	tesa® 77112					tesa® 74512
1.5		tesa® 7815	tesa® 77115	(tesa® 77315)	tesa® 77615	tesa® 77715	tesa® 77815	
2.0		tesa® 7820						

Good to know

- **Log-rolls available in 33m, 66m, 132m**

- Spools available in various widths and lengths

- Paper and film liner available

- Additional thicknesses possible on request

- PV29 liner is the best film liner in the market according to several customers (OEM / OES / Converter)

- New Liner Systems for ACX^{plus} Primerless line (no silicone on the outside) coming in 2023

ACX^plus Assortment

Attachment Part Applications

Applications	Typical Parts						Typical material in use	Black Box Design
Plastic part to clear coat	Aeroflap	Body side molding	Brake light spoiler	Door edge molding	Roof ditch trim	Trunk molding	Reinforced PP PP/EPDM ABS ABS/PC	No
	Emblem	Fender flare	Pillar appliqué	Rocker panel	Roof rail	Shark fin antenna		
Plastic part to plastic part or metal	PDC sensor holder to bumper						PP/EPDM to Reinforced PP	Sometimes
	Doorsill trim inlay						Metal to PP, PP to PP	
	Window frame inlay						Alu to PP	

ACX^{plus} Assortment

Guideline to help you select the right tesa product for your next project

MSE Plastic		LSE Plastic	

MSE Plastic

Flat surface

Easy to bond CC

tesa®
ACX^{plus}
78xx

tesa®
ACX^{plus}
771xx

tesa®
ACX^{plus}
772xx
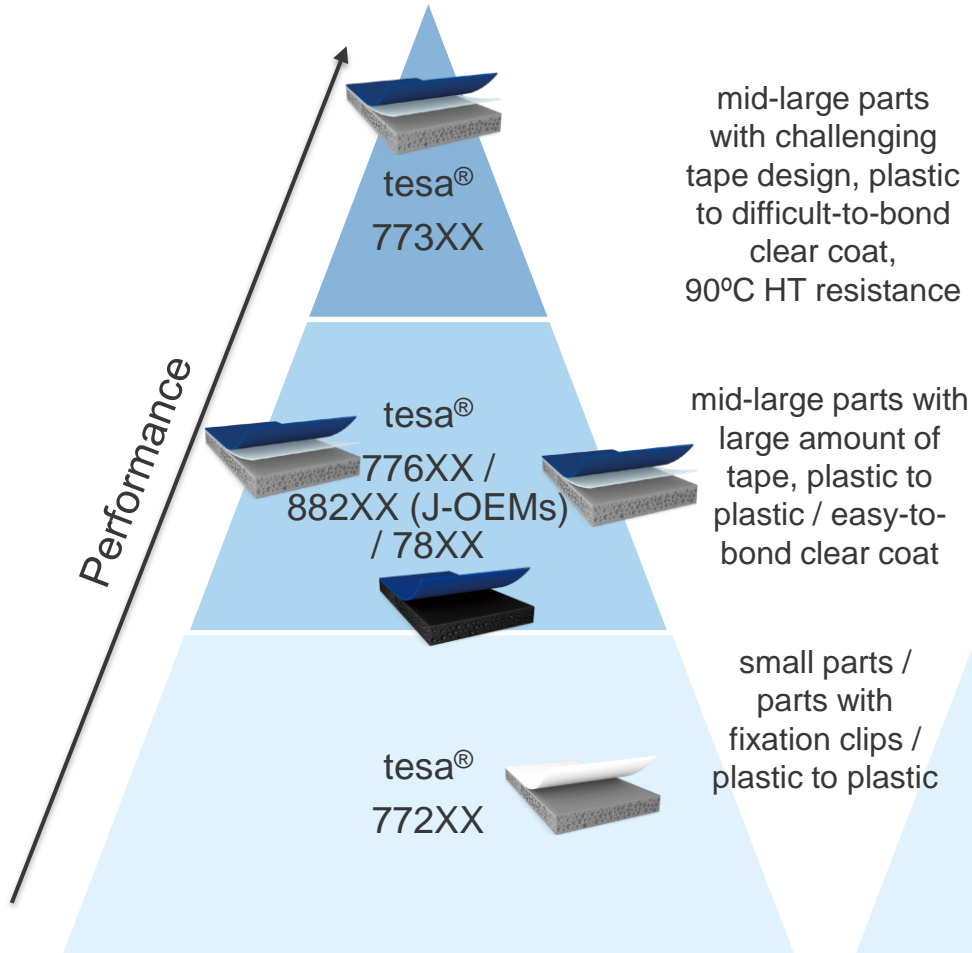
Difficult to bond CC

tesa®
ACX^{plus}
778xx
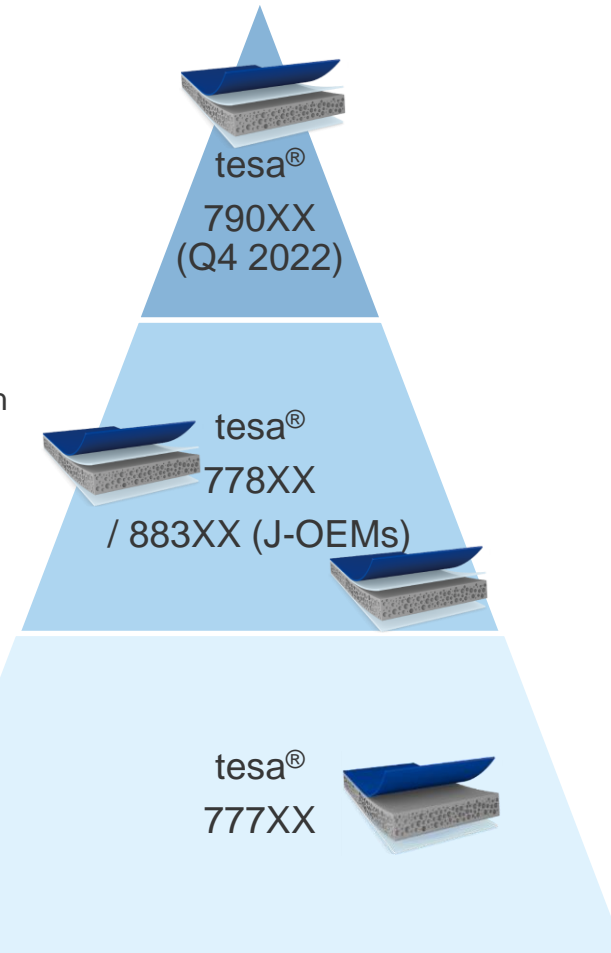
tesa®
ACX^{plus}
776xx

tesa®
ACX^{plus}
773xx

LSE Plastic

Flat surface

Easy to bond CC

tesa®
ACX^{plus}
777xx

Difficult to bond CC

tesa®
ACX^{plus}
778xx

Primerless Line not to be used on ribbed surfaces!

Flat or ribbed surface

Primer (Flame/Corona/Plasma)

Easy to bond CC

tesa®
ACX^{plus}
78xx

tesa®
ACX^{plus}
771xx

tesa®
ACX^{plus}
772xx

Difficult to bond CC

tesa®
ACX^{plus}
776xx

tesa®
ACX^{plus}
773xx

ACX^plus Assortment

Attachment Part Mounting Assortment Guide

tesa®

! This only displays a general indication, deviations possible in practice

Standard ACX^plus

tesa®
773XX
— mid-large parts with challenging tape design, plastic to difficult-to-bond clear coat, 90ºC HT resistance

tesa®
776XX /
882XX (J-OEMs)
/ 78XX
— mid-large parts with large amount of tape, plastic to plastic / easy-to-bond clear coat

tesa®
772XX
— small parts / parts with fixation clips / plastic to plastic

Performance ↑

Primerless ACX^plus

tesa®
790XX
(Q4 2022)

tesa®
778XX
/ 883XX (J-OEMs)

tesa®
777XX

Roof ditch trim · Brake light spoiler · Aeroflap · Shark fin antenna · Trunk molding · Pillar appliqué

Body side molding · Pillar appliqué · Trunk molding · Window frame

Door edge molding · Fender flare · Rocker panel

Emblem · Park distance sensor · Doorsill trim

Product Highlights (78XX Black Line, 773xx ACXplus, 778xx Primerless Line)

ACX^plus Product Highlights
tesa ACX^plus 78XX BLACK LINE

- tesa® ACX^plus 78XX

blue film liner

modified acrylic foam
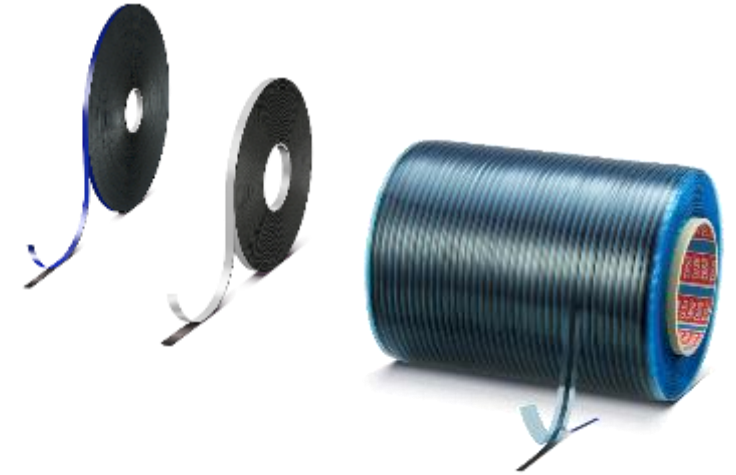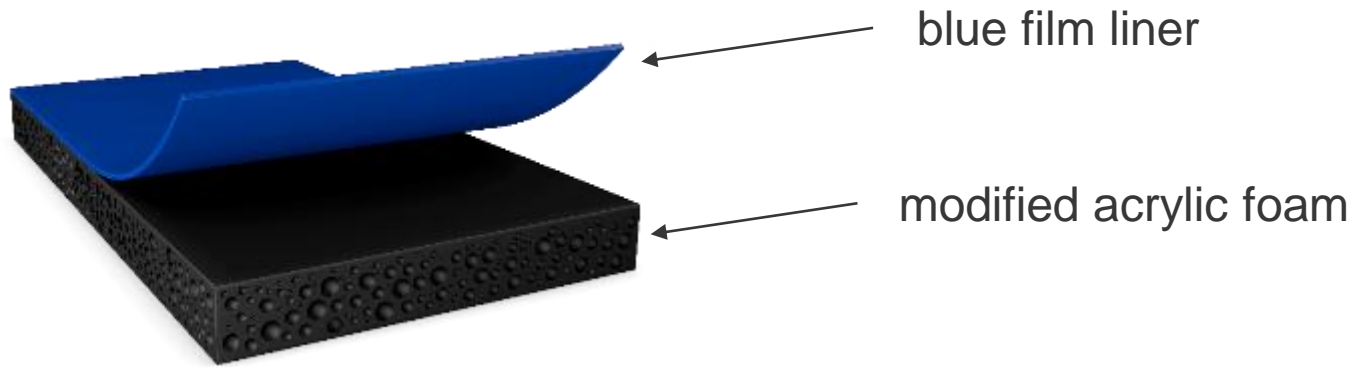
tesa® ACX^plus 78XX BLACK LINE

	Thickness	Features	
7820	2.0 mm	• viscoelastic modified acrylic foam	• **laminates possible** (2-3 layers)
7815	1.5 mm	• **high bonding power, outstanding on PC & PMMA**	• PV25 – white PE-coated paper liner
7812	1.2 mm	• **excellent performance on ribbed surface + primer**	• **PV28/29 liner suitable for adhesive and heat tabbing**
7811	1.1 mm	• **deep black**	• PFAS/ PFOS free product
7808	0.8 mm	• **excellent cold shock performance**	
7805	0.5 mm	• good die-cut ability	
		• long term stable	
		• suitable for all length of trims	

tesa ® ACX^{plus} 78XX Black Line: Superior PV29 Liner, deep black color, extremely good at cold shock performance …

Emblem Scripting bonded on black painted clear coat
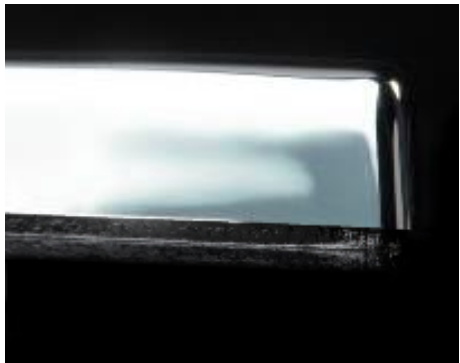
tesa ® ACX^{plus} Black Line

Competition

Lower compression during mounting enables for **smaller design** gaps. Thinner open tape area together with **deep black color** results in almost **invisible bond**.

ACX^{plus} Product Highlights

tesa ACX^{plus} 773XX

- tesa® ACX^{plus} 773XX {NEW}
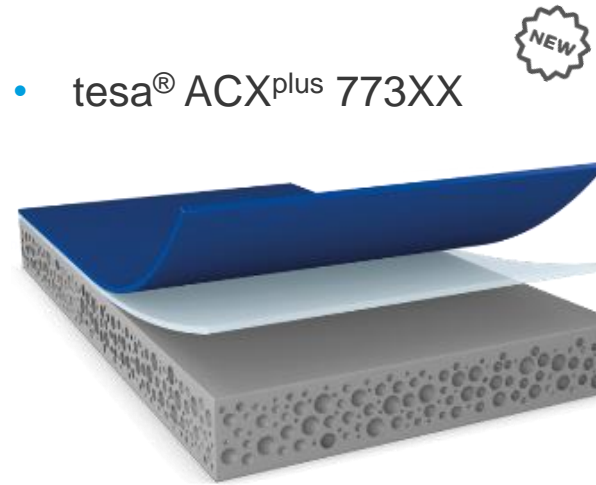
Acrylic Adhesive
Cover Side
(to Clear Coat Side)

Acrylic Foam
Open Side
(to Plastics Side with Primer)
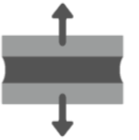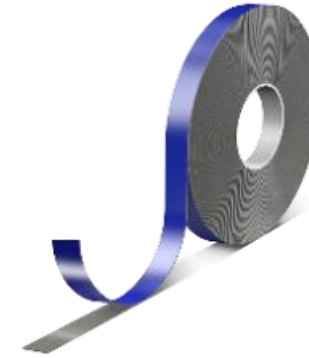
tesa® ACX^{plus} 773XX

	Thickness	Features	
77315 77311 77308	(1.5 mm)* 1.1 mm (0.8 mm)* *will soon be available	• **High performance on plastics with primer and various clear coats without primer** • Viscoelastic acrylic foam core compensates thermal elongation of bonded parts • **Outstanding wet-out property** • Good gap filling performance	• High humidity and UV resistance • Compliant with REACH • PFAS / PFOS free Product • IP67 compliant

ACX^plus Product Highlights
tesa® ACX^plus 773XX Line Performance Highlights

Our Power Offer: 77311 has high bonding strength on various Clear Coats used in main OEM plants

- Wide Clear Coats Adaptability → The same tape solution for different plants using different CCs
- High economical efficiency → The same tape solution for different APM projects

90° Peel Adhesion of 77311
acc. to Geely Spec

[N/mm]

----- *Geely Spec*

Chart categories: initial, normal state, heat aging, humidity resistance, water resistance

Legend:
- Nippon PU 2K HD
- PPG GL2HKC1050
- BASF ProGloss FF99-074A
- AXALTA Supermar
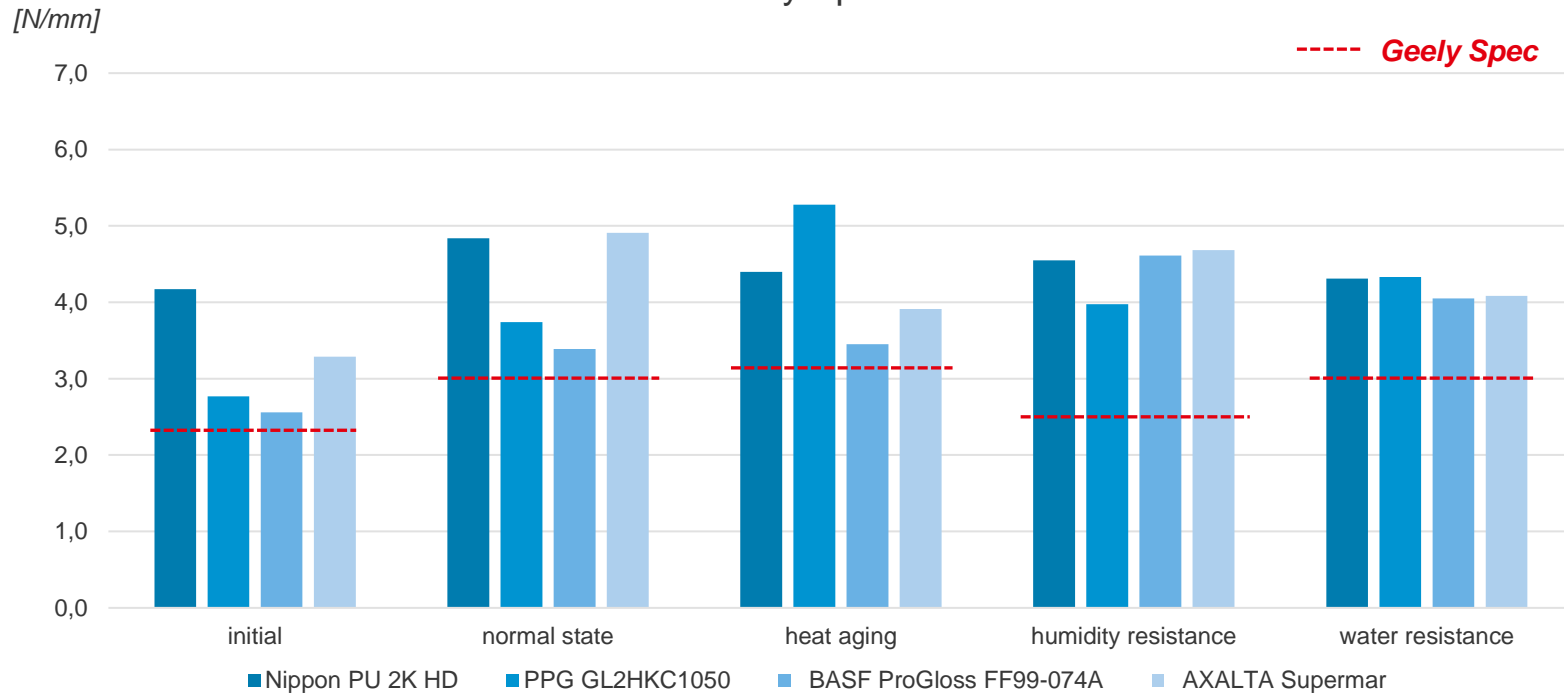
Temperature resistance long term - 40°C to +90°C
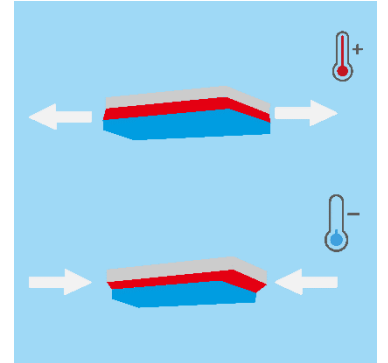
High bonding strength on various Clear Coats

ACX^plus Product Highlights

tesa ACX^plus 778XX PRIMERLESS LINE

- tesa® ACX^plus 778XX

PV15, blue HDPE film liner

LSE specialty adhesive

pure acrylic foam core

LSE specialty adhesive
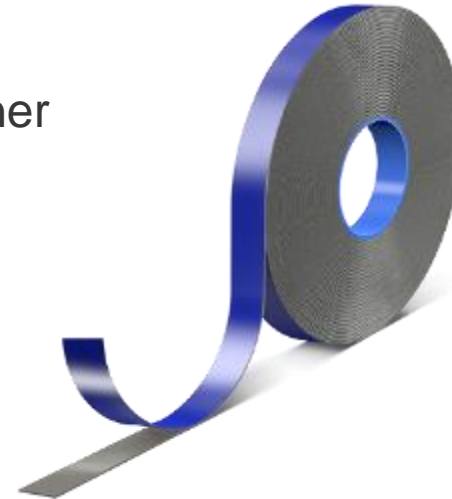
No primer needed

tesa® ACX^plus 778XX Primerless Line

	Thickness	Features
77815	1.5 mm	• viscoelastic pure acrylic foam core
77811	1.1 mm	• LSE specialty adhesive
77808	0.8 mm	• **high initial adhesion to LSE plastics (PP/EPDM, PP) and clear coats**
77805	0.5 mm	• **high initial adhesion already at 5 °C**
		• gray
		• long term stable
		• suitable for all length of trims

ACX^{plus} Product Highlights

tesa® ACX^{plus} Primerless Line Performance Highlights

Excellent performance within the first minute to LSE plastic

No matter whether it is a low temperature down to 5°C or high temperature up to 40°C, within the first minute after application our primerless products reach a near-ultimate peel adhesion level on most substrates, whereas the typical solutions on the market need time to set.

tesa® ACX^{plus} Primerless Line

Typical primerless solution on the market

ACX^{plus} Product Highlights

tesa® ACX^{plus} Primerless Line Performance Highlights

Peel Adhesion of Open Side to PP/EPDM

Excellent performance within the first minute to LSE plastic

No matter whether it is a low temperature down to 5°C or high temperature up to 40°C, within the first minute after application our primerless products reach a near-ultimate peel adhesion level on most substrates, whereas the typical solutions on the market need time to set.

Assortment Accessories

ACX^{plus} Assortment Accessories

Available formats and dimensions

Format	Log roll	Cut roll	Spool
Length	25/33/66/132m	25/33/66m	<1400m
Width	900-1260mm	>=6mm	>=4mm

Shown dimension ranges are a general indication, can vary by product line and thickness.
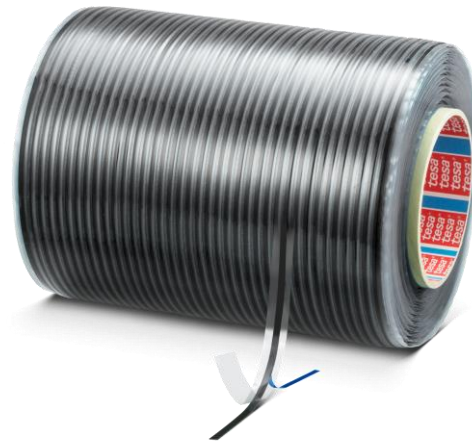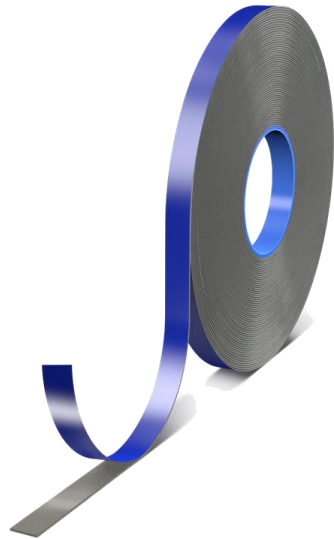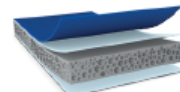
132m logs for increased efficiency and less waste
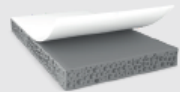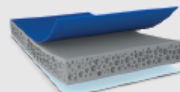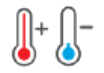
- Assortment addition to 33m and 66m logs
- Increased efficiency for converters
- Less waste production
- Attractive pricing

tesa®

ACX^{plus} Assortment Accessories

132m logrolls availability

	tesa® ACX^{plus} 772XX Base Line	tesa® ACX^{plus} 78XX Black Line	tesa® ACX^{plus} 771XX	tesa® ACX^{plus} 776XX	tesa® ACX^{plus} 777XX Primerless Line	tesa® ACX^{plus} 778XX Primerless Line$^{1)}$
Product family						
Product design	Single layer	Single layer	Three layers	Two layers	Two layers	Three layers
Construction	Pure acrylic foam	Modified acrylic foam	Pure acrylic foam core with tackified acrylic adhesive	Pure acrylic foam core with covered side LSE adhesive	Pure acrylic foam core with open side LSE adhesive	Pure acrylic foam core with both sides LSE adhesive
Color	Gray	Deep black	Black	Gray	Gray	Gray
0.4	tesa® 77204					
0.5		tesa® 7805				tesa® 77805
0.6	tesa® 77206					
0.8	tesa® 77208	tesa® 7808	tesa® 77108	tesa® 77608	tesa® 77708	tesa® 77808
1.1		tesa® 7811		tesa® 77611	tesa® 77711	tesa® 77811
1.2	tesa® 77212	tesa® 7812	tesa® 77112			
1.5		tesa® 7815	tesa® 77115	tesa® 77615	tesa® 77715	tesa® 77815

Thickness [mm]

Liner and tabbing

PV31 – white film liner • Thickness: 110 µm • Both sides siliconized • Tabbing solution: 54999 (50099 for log roll) and 54699 (50699 for log roll) adhesive tabbing PV04 – white PE coated paper liner • Thickness: 140 µm • Both sides siliconized • Available for 77204 only	PV29 – blue film liner • Thickness: 130 µm • Siliconized only on tape side Tabbing solution: 50999 heat tabbing film, 54999 (50099 for log roll) and 54699 (50699 for log roll) adhesive tabbing PV25 – white paper liner • Thickness: 122 µm • Both sides siliconized	PV28 – blue film liner • Thickness: 160 µm • Silicone free film Tabbing solution: 50999 heat tabbing film, 54988 (50988 for log roll) adhesive tabbing PV26 – white paper liner • Thickness: 160 µm Both sides siliconized	PV15 – blue film liner • Thickness: 100 µm • Both sides siliconized • 54699 (50699 for log roll) adhesive tabbing	PV15 – blue film liner • Thickness: 100 µm • Both sides siliconized • 54699 (50699 for log roll) adhesive tabbing	PV15 – blue film liner • Thickness: 100 µm • Both sides siliconized Tabbing solution: 54999 (50099 for log roll) and 54699 (50699 for log roll) adhesive tabbing

Assortment addition 132m logs (all others upon request)

ACXplus Assortment Accessories
Liner and Tabbing

Product family	tesa® ACXplus 772XX Base Line	tesa® ACXplus 78XX Black Line	tesa® ACXplus 771XX	tesa® ACXplus 776XX	tesa® ACXplus 777XX Primerless Line	tesa® ACXplus 778XX Primerless Line¹⁾
Product design	Single layer	Single layer	Three layers	Two layers	Two layers	Three layers
Construction	Pure acrylic foam	Modified acrylic foam	Pure acrylic foam core with tackified acrylic adhesive	Pure acrylic foam core with covered side LSE adhesive	Pure acrylic foam core with open side LSE adhesive	Pure acrylic foam core with both sides LSE adhesive
Color	Gray	Deep black	Black	Gray	Gray	Gray
Liner and tabbing	**PV31 – white film liner** • Thickness: 110 μm • Both sides siliconized • Tabbing solution: 54999 (50099 for log roll) and 54699 (50699 for log roll) adhesive tabbing **PV04 – white PE coated paper liner** • Thickness: 140 μm • Both sides siliconized • Available for 77204 only	**PV29 – blue film liner** • Thickness: 130 μm • Siliconized only on tape side Tabbing solution: 50999 heat tabbing film, 54999 (50099 for log roll) and 54699 (50699 for log roll) adhesive tabbing **PV25 – white paper liner** • Thickness: 122 μm • Both sides siliconized	**PV28 – blue film liner** • Thickness: 160 μm • Silicone free film Tabbing solution: 50999 heat tabbing film, 54988 (50988 for log roll) adhesive tabbing **PV26 – white paper liner** • Thickness: 160 μm Both sides siliconized	**PV15 – blue film liner** • Thickness: 100 μm • Both sides siliconized • 54699 (50699 for log roll) adhesive tabbing	**PV15 – blue film liner** • Thickness: 100 μm • Both sides siliconized • 54699 (50699 for log roll) adhesive tabbing	**PV15 – blue film liner** • Thickness: 100 μm • Both sides siliconized Tabbing solution: 54999 (50099 for log roll) and 54699 (50699 for log roll) adhesive tabbing

Adhesion Promoters

Tabbing tapes

Evaluation Adhesion Promoter (60151, 60153)

	60151	60153	
Surface	Glass	PP/EPDM	Ceramic frit coated glass
UV Track	N	Y	Y

AP 60151: Product shows high peel strength on glass after usage of AP60151, also after temperature & humidity storage.

AP 60153: Product shows high peel strength after usage of AP60153, also after temperature & humidity storage.

ACX^{plus} Tabbing Tapes
tesa® ACX^{plus} Workable Tabbing Tapes Overview

	Suitable for product	Thickness [µm]	Adhesive	Backing	Color	Tensile Strength [N/cm]	Elongation at break [%]
Adhesive Tabbing							
tesa® 50099	78XX PV29 778XX PV15 772XX PV31	150	Silicone	PET	Green	>100	>75
tesa® 50988	78XX PV29 771XX PV28 745XX PV29	200	Synthetic Rubber	PET	Transparent	>100	>75
tesa® 50699	773XX PV15 776XX PV15 777XX PV15 (778XX PV15) (772XX PV31/PV34) (78XX PV29)	130	Silicone	PET	Green	>100	>80
Heat Tabbing							
tesa® 50999	78XX PV29 771XX PV28 745XX PV28 745XX PV29	150	LDPE	PET	Translucent	>40	>75

Customer Solution Center
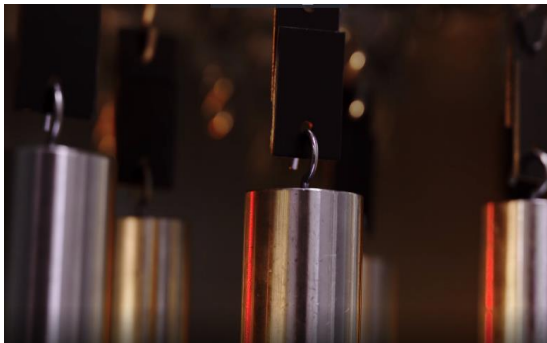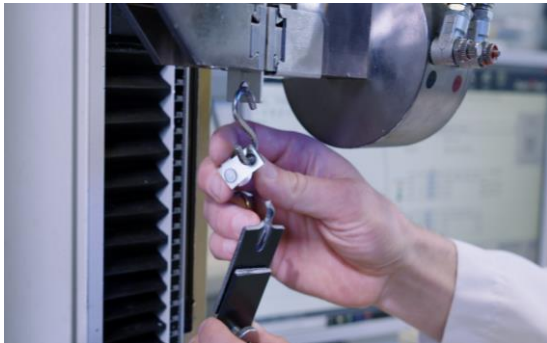
Customer Solution Center
Process Support at Customer for Higher Efficiency

Our Customer Solution Center, Application Solution Engineers and Application Process Engineering team in Europe, Asia and America support you to choose the right tape and enable an efficient production.
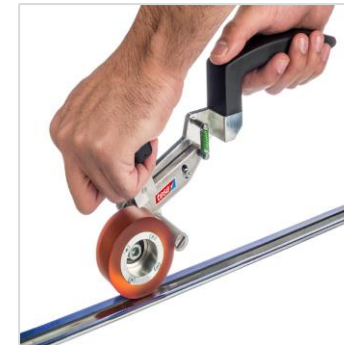
Material testing	Application Solution Engineering	Application Process Engineering
Laboratory testing acc. OEM specs.	Consulting and product support	Pressure roller, applicators and tooling

Customer Solution Center
Process Support at Customer for Higher Efficiency

R&D/ Customer Solution Center

Customer requirement

Production
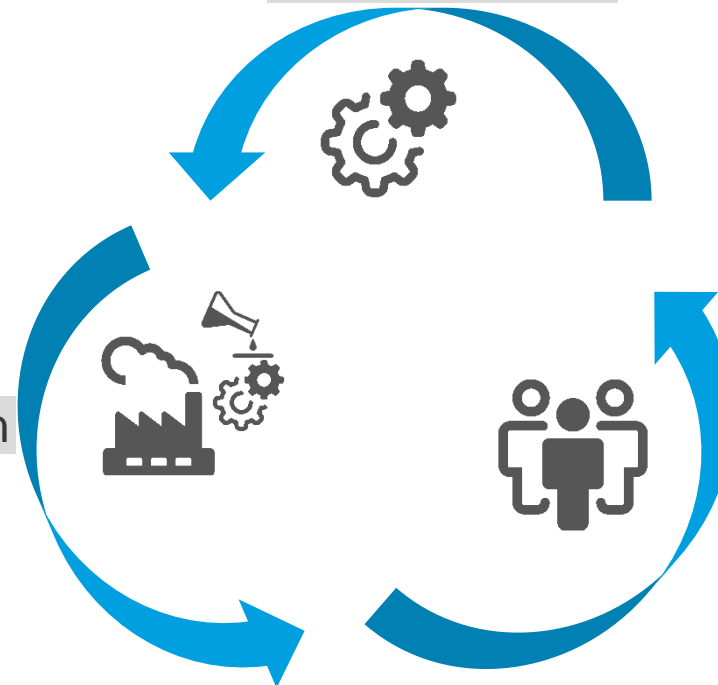
Technical consultancy

Joint and holistic implementation of customer solution

Q&A

You are welcome!

Chetan Busireddy & Martin Geelink

BU Automotive

tesa SE

Learn more about our company
www.tesa.com

tesa® products prove their impressive quality day in, day out in demanding conditions and are regularly subjected to strict controls. All technical information and data mentioned above are provided to the best of our knowledge on the basis of our practical experience. They shall be considered as average values and are not appropriate for a specification. Therefore tesa SE can make no warranties, express or implied, including, but not limited to any implied warranty of merchantability or fitness for a particular purpose. The user is responsible for determining whether the tesa® product is fit for a particular purpose and suitable for the user's method of application. If you are in any doubt, our technical support staff will be glad to support you.