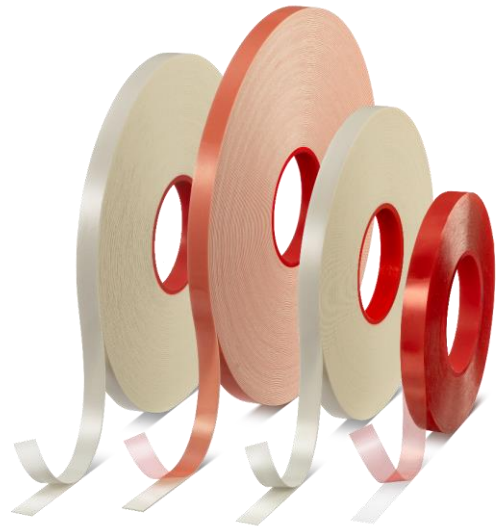


tesa[®] Flame Retardant & Halogen-free Mounting





Why tesa?



Wide assortment for many different applications and industries



All products fulfill the global flame retardant norms (UL94 & FMVSS 302)



Halogen-free products



Good and very competitive pricing



tesa® flameXtinct 45001 as
UNIQUE PRODUCT



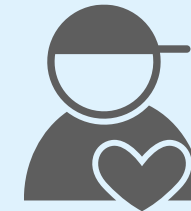
First success projects are closed already. References available!

Why do we need flame retardant products?

- **Fire resistance** refers to materials that are inherently nonflammable – e.g. concrete, steel, glass, etc.
- **Flame retardant (FR)** materials are chemically treated to be slow burning or self-extinguishing – e.g. tesa® flameXtinct

Fire resistant vs. **Flame retardant**

- Flame retardant products play a vital role in our **daily lives** when it comes to **health and asset protection**.



- **Many industries** rely on **flame retardant pre-products** when it comes to increased safety of manufactured goods.





Why halogen-free products are crucial for passive fire protection

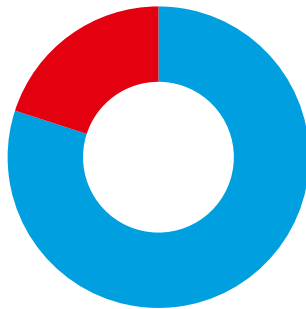
Toxicity



Reduced smoke & toxicity

Halogen-free products can reduce smoke and contribute to less fire gas toxicity

Casualties



Fire
20%



Smoke
80%

Smoke main death reason

Approximately 80% of fire-related deaths are due [...] the inhalation of toxic products.*

Regulations



Government
of Canada



ECHA
EUROPEAN CHEMICALS AGENCY

Ready for future regulations

National and international regulations tend to restrict the use of certain halogenated products in the future

* Inhalation injury as a prognostic factor for mortality in burn patients, El-Helbawy et. Al (2011)



Wide product portfolio to fit all demands

tesa® filmic and non-woven



tesa® 5837x and flameXtinct 45051

- 50µm, 80µm, 130µm, 200 µm

tesa® PE foam



tesa® flameXtinct 45001

- 1000 µm

tesa® Acrylic core

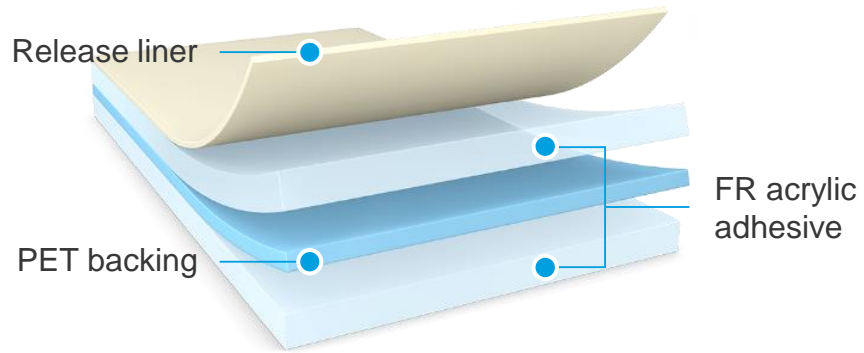


tesa® flameXtinct 45063 and 45065

- 800 µm, 1200 µm

tesa® 58372, 58373 and flameXtinct 45051

PET-film tape with flame retardant properties



tesa® 58372, 58373 and flameXtinct 45051 – Product design	
Total thickness	50µm, 80µm and 200µm
Color	Transparent
Adhesive	FR acrylic
Backing	PET film
Release liner	PV0 = red MOPP, PV40 = Paper white (red logo)



tesa® 58372, 58373 and flameXtinct 45051 - Applications

- Reliable adhesion to metals, coated materials, glass and many plastic surfaces
- **tesa® 58372, 58373 and flameXtinct 45051** is the right choice for **standard mounting applications** which require **flame retardant characteristics**

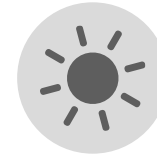
tesa® 58372, 58373 and flameXtinct 45051 - Features



Flame retardant



Great adhesion on a variety of surfaces



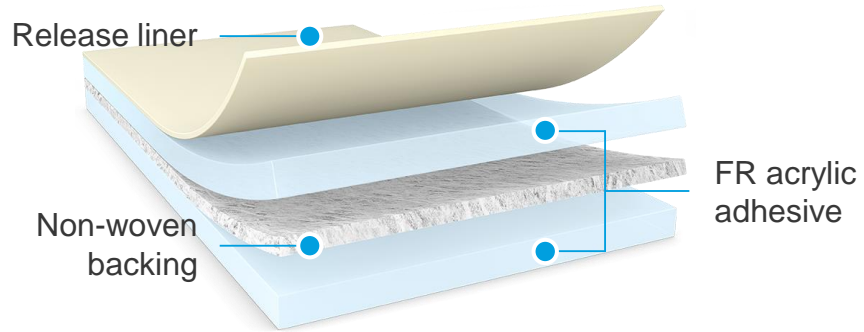
Aging resistant



Flexible



Efficient converting



tesa® 58375 – Product design	
Total thickness	130 µm
Color	Translucent
Adhesive	FR acrylic
Backing	Non-woven
Release liner	PV40 = Paper white (red logo)



tesa® 58375 - Applications

- Good adhesion to metals, coated materials, glass etc.
- Very good conformable to uneven shapes during lamination
- **tesa® 58375 is the right choice for standard lamination applications which require flame retardant characteristics**

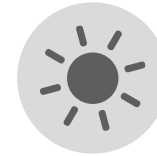
tesa® 58375 - Features



Flame retardant



Great adhesion on a variety of surfaces



Aging resistant



Flexible

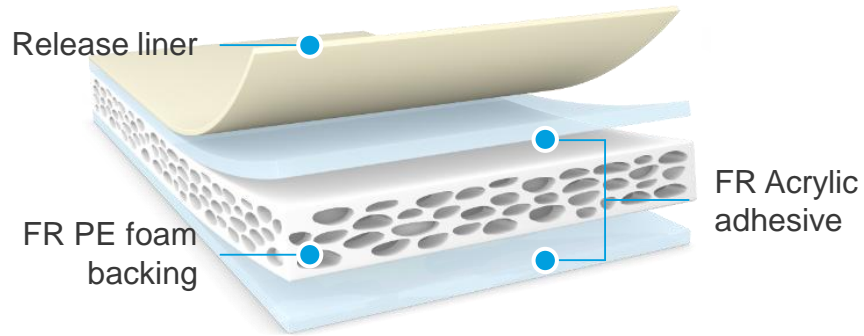


Efficient converting

tesa® flameXtinct 45001

1000 µm PE foam tape with flame retardant properties

UNIQUE PRODUCT



tesa® flameXtinct 45001 – Product design

Total thickness	1000 µm	
Color	White	
Adhesive	FR acrylic	
Backing	Closed cell FR PE foam	
Release liner	PV6 = red MOPP	

tesa® flameXtinct 45001 - Applications

- Reliable adhesion to metals, coated materials, glass and many plastic surfaces
- **tesa® flameXtinct 45001** is the **world's only flame retardant PE foam tape**. It is used for a variety of **demanding applications** such as reinforcement bar mounting in elevators

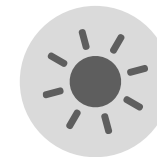
tesa® flameXtinct 45001 - Features



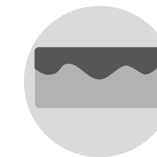
Flame retardant



Great adhesion on a variety of surfaces



Aging resistant



Gap filling & highly conformable



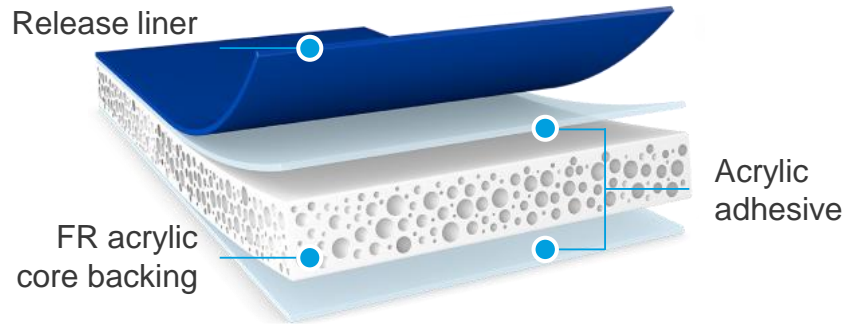
Shock absorption



Light weight

tesa® flameXtinct 45063 / 45065

800 µm / 1000 µm acrylic core tape with flame retardant properties



tesa® flameXtinct 45063 / 45065 – Product design		
Total thickness	45063 800 µm	45065 1200 µm
Color	White	
Adhesive	Acrylic adhesive	
Backing	FR acrylic core	
Release liner	PV26 = PE coated paper	



tesa® flameXtinct 45063 / 45065 - Applications

- Great adhesion to metals, coated materials, glass and many plastic surfaces.
- Premium acrylic core FR tapes for **demanding applications** such as metal fixation, reinforcement bars for elevators, etc.

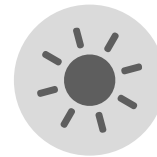
tesa® flameXtinct 45063 / 45065 - Features



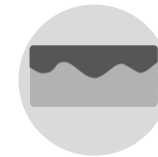
Flame retardant



Great adhesion on a variety of surfaces



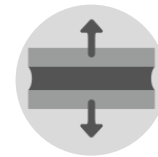
Aging resistant



Gap filling



Viscoelastic



Excellent bonding strength

tesa® Flame Retardant & Halogen-free Mounting Portfolio - summary



Product	Filmic and non-woven backing				PE-foam	Acrylic Core	
	tesa® 58372	tesa® 58373	tesa® 58375	tesa® flameXtinct 45051	tesa® flameXtinct 45001	tesa® flameXtinct 45063	tesa® flameXtinct 45065
Total thickness [µm]	50	80	130	200	1,000	800	1,200
Color	Translucent	Transparent	Translucent	Transparent	White	White	White
Type of adhesive	FR modified acrylic	FR modified acrylic	FR modified acrylic	FR modified acrylic	FR modified acrylic	Acrylic	Acrylic
Backing	PET	PET	Non-woven	PET	FR modified PE-foam	FR modified PE-foam	FR modified PE-foam
Liner	Glassine, white (red logo)	Glassine, white (red logo)	Glassine, white (red logo)	MOPP, red	MOPP, red	Glassine, white	Glassine, white
Temperature resistance long-term [°C]	125	125	125	100	80	80	80
Adhesion to steel (ASTM) [N/cm]	8.5	8.2	8.9	12	22	28	28
Tests and approvals							
Halogen-free	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tested acc. to UL94	VTM-0	VTM-0	VTM-0	VTM-0	HBF HF-1	V-2	V-2
Tested acc. to FMVSS 302	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Available dimensions							
Log dimensions	100 m x 1,250 mm	100 m x 1,250 mm	100 m x 1,250 mm	50 m x 1,360 mm	50 m x 1,360 mm	33 m x 500 mm	33 m x 500 mm
Slitter (rolls with individual dimensions)	Available	Available	Available	Available	Available	Available	Available

tesa® FR Portfolio



Flame retardant



Halogen-free

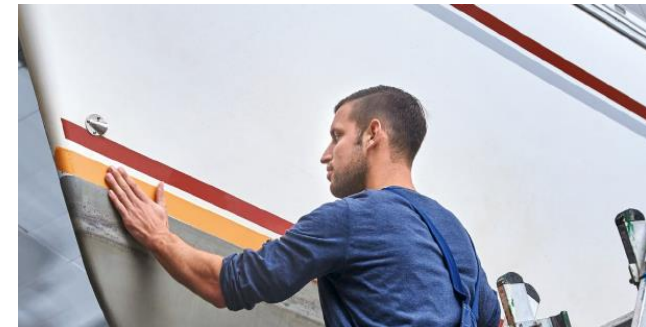


High performance adhesives



Wide product portfolio

Our tesa® Flame Retardant assortment contributes to “passive fire protection” in many industries



tesa® Flame Retardant & Halogen-free Mounting

Focus applications & focus industries



Automotive

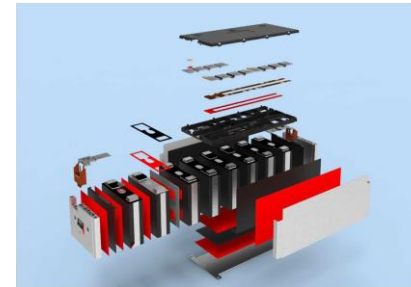
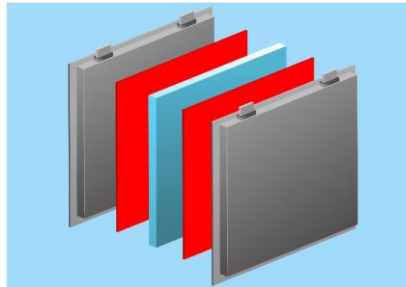
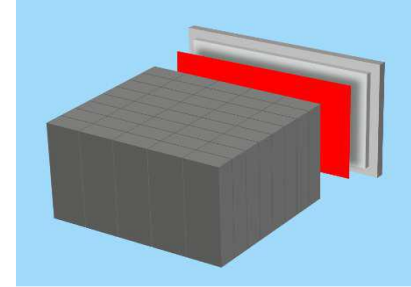
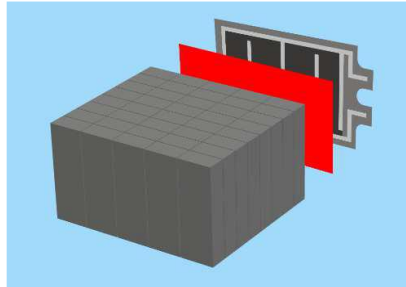


Details

- e-Mobility
- Cushion

Target customer group:

- ❖ Component suppliers
- ❖ Heat source suppliers
- ❖ Converters



- Several bonding applications in traction batteries
- lamination (e.g: cushion) with flame retardant requirements



tesa® 5837x



Requirements:

- UL94
- FMVSS 302

tesa® Flame Retardant & Halogen-free Mounting

Focus applications & focus industries



Building Industry

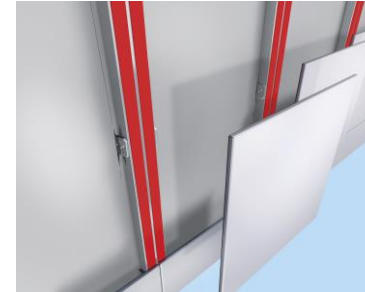


Details

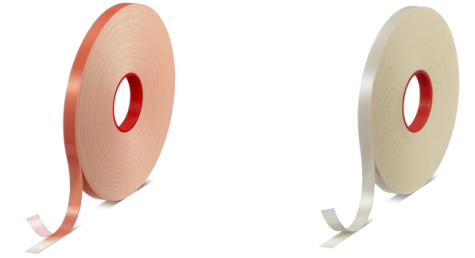
- **Elevators**
- Fireproof doors
- Interior fit out

Target customer group:

- ❖ OEM / producer
- ❖ Component supplier



- Elevators: landing doors & reinforcement bar mounting
- Interior fit out: wall cladding
- Fireproof doors: panel- & components



tesa® flameXtinct 45001
and 4506x



Requirements:

- UL94
- EN 81-58:2018 -05*
- EN 13501-1*
- EN 13823*

* part- and assembly testing

tesa® Flame Retardant & Halogen-free Mounting

Focus applications & focus industries



Trains

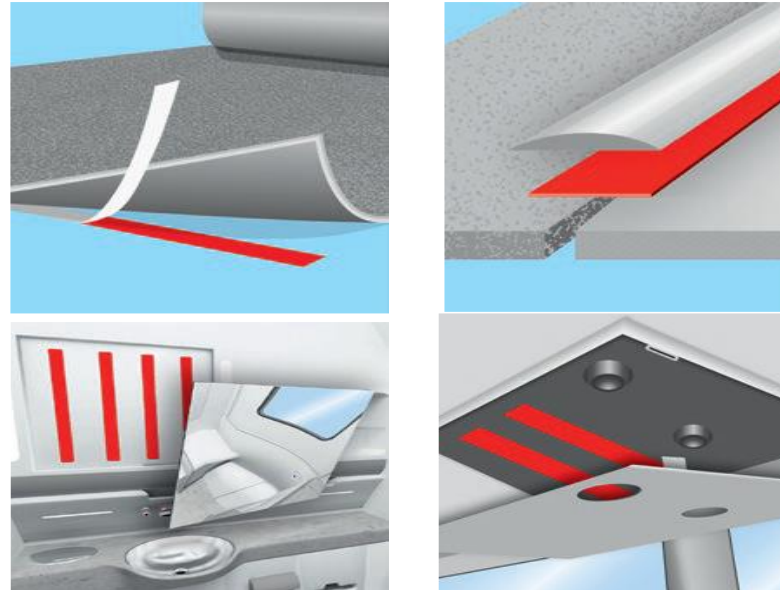


Details

- Carpet laying (flooring)
- Interior design

Target customer group:

- ❖ OEM / producer
- ❖ Component supplier



- Flooring: carpet laying & cover trims
- Interior design: Mirror mounting
- Interior design: panel- & components



tesa® flameXtinct 45051, 45001, 4506x



Requirements:

- EN 45545*

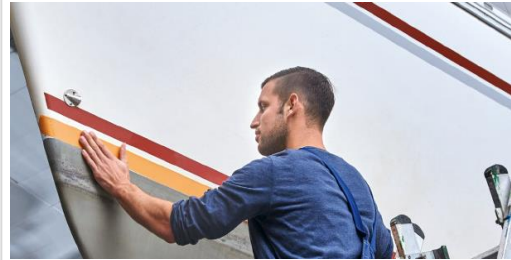
* part- and assembly testing

tesa® Flame Retardant & Halogen-free Mounting

Focus applications & focus industries



Marine

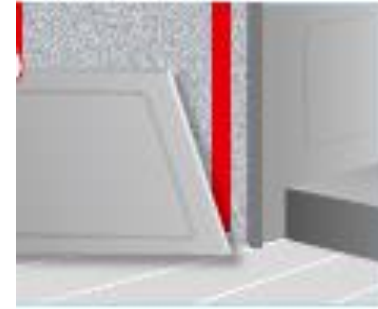
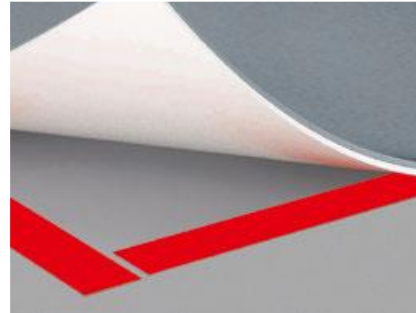


Details

- Carpet laying (flooring)
- Interior design

Target customer group:

- ❖ OEM / producer
- ❖ Component supplier



- Flooring: carpet laying & cover trims
- Interior design: Mirror mounting
- Interior design: panel- & components



tesa® flameXtinct 45051, 45001, 4506x



Requirements:

- FTP Code 2010 – IMO*

* part- and assembly testing

tesa® Flame Retardant & Halogen-free Mounting

Focus applications & focus industries



Appliance



Details

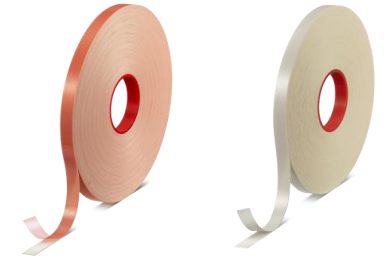
- **Mounting applications**

Target customer group:

- ❖ OEM / producer
- ❖ Component supplier



- Door panels / front panels
- Control panels
- Design panels & small parts



tesa® flameXtinct,
45001, 4506x



Requirements:

- UL94

tesa® Flame Retardant & Halogen-free Mounting

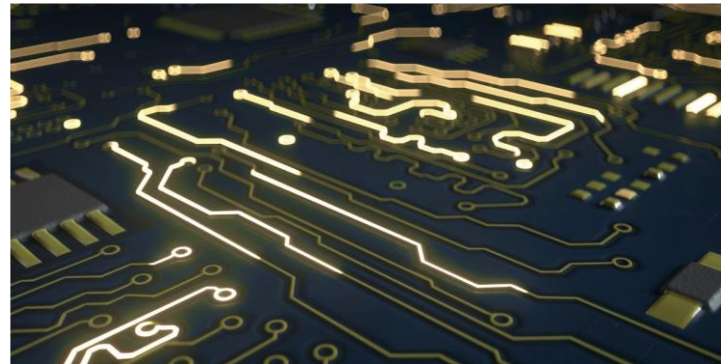
Other applications & Industries



Special vehicles



Electronic devices



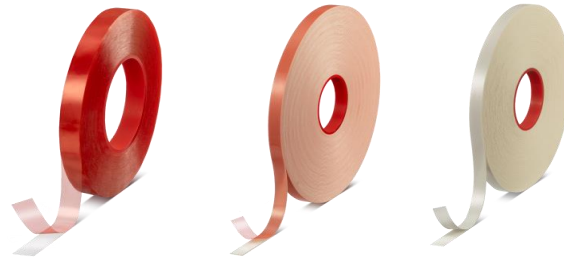
Signage



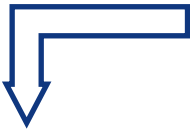
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tesa® Flame Retardant & Halogen-free Mounting

Supply Chain – Focus Markets



tesa® Flame Retardant Assortment



Direct markets



Trade Partners



Trade Partners, MRO,
Online & Catalogue



Converter



tesa® Flame Retardant & Halogen-free Mounting

Logistic



IBNR	Product name	Backing	Thickness in µm	Nart	Lenght in m	Width in mm	AF	Stock/ non stock	MOQ
58372	tesa® 58372	Filmic	50	58372-60000-40	100	1250		stock	1
				58372-00001-40	100	1250	68	non stock	1
58373	tesa® 58373	Filmic	80	58373-60000-40	100	1250		stock	1
				58373-00000-40	100	1250	68	non stock	1
58375	tesa® 58375	Non-woven	130	58375-60000-40	100	1250		stock	1
				58375-00001-40	100	1250	68	non stock	1
45051	tesa® flameXtinct 45051	Filmic	200	45051-60000-00	50	1360		stock	1
				45051-60002-00	50	1360	68	non stock	1
45001	tesa® flameXtinct 45001	Foam	1000	45001-60000-06	50	1360		stock	1
				45001-00002-06	50	1360	68	non stock	1
45063	tesa® flameXtinct 45063	Acrylic Core	800	45063-00000-26	33	500		stock	1
				45063-00001-26	33	500	68	non stock	1
45065	tesa® flameXtinct 45065	Acrylic Core	1200	45065-00000-26	33	500		stock	1
				45065-00001-26	33	500	68	non stock	1

 Additional NARTs / dimensions on demand

tesa® Flame Retardant & Halogen-free Mounting Communication Material



Communication Material	Status
Customer presentation	Available
PI sheets	Available
MSDS	Available
Certificates & test reports (UL94 etc.)	Available
Marketing Material	Status
Product shots	Available
Visuals	Available
Videos	Available
Editorial	Available
Folder	Available

tesa® flameXtinct 45051

Product Information

200µm Flame Retardant Film Tape

The tesa® flameXtinct product family comprises a variety of high performance adhesive tape solutions for mounting applications. The tesa® flameXtinct assortment, and thus all contained products are clearly defined by following characteristics:

- Flame retardant
- Halogen-free
- High performance adhesives
- Wide product portfolio

tesa® flameXtinct 45051 product is a flame retardant film tape for permanent mounting. The tape comprises of a proprietary flame retardant acrylic adhesive and PET-film backing with excellent flexibility and conforming properties. Following features are offered:

- Proven flame retardant characteristics according to UL 94 V-0
- Free of halogens and antimony-trioxide (REACH and RoHS conformity)
- Excellent adhesion characteristics on a variety of surfaces
- High flexibility and conforming properties

Main Application

- Building Industry
- Elevators
- Automotive
- Appliance
- Marine
- Trains

Technical Information (average values)

tesa® 45001

FLAME RETARDANT FOAM TAPE

Introducing tesa® flame retardant foam tape for mounting applications with demanding requirements on fire protection.

We understand customer needs. That's why we developed tesa® 45001. The product is an... when it comes to strong and long bonding on varying surfaces. A... current and future requirements... ability aspects are met. The... retardant properties ensure... demanding applications.

UL 94 HBF
6th Edition, Revision Date 27-JUNE-2020

*** PROJECT INFORMATION ***

Customer:	TESA SE		
Order Number:	KUJKT15680	Lot Number:	tesa 45001
Date Received:	2020-12-30	Material Type:	-
Date Tested:	2020-12-11	Batch:	-
Project Number:	-	File Number:	-

*** SAMPLE SET INFORMATION TABLE ***

Nom. Thickness [mm]	Nom. Cond. Temp. [°C]	Rating	Tested by:
48	23	HF-1	21930, 21946
168	70	HF-1	21930, 21946
		Overall Rating:	HF-1

*** TEST PARAMETERS INFORMATION ***

U1:	Afterflame time
U2:	Afterglow time
U3:	Propagation time post Afterglow time
U1.2:	Overall damaged length
U3:	Separation of burning beyond 25mm gauge mark
U4:	Straggled length beyond 25mm gauge mark
U5:	Straggled length beyond 50mm gauge mark
Sum Note:	The burning time is calculated per minute. Calculated Note.

*** COMMENTS TABLE ***

Number	Description
1	Specimen did NOT drip
2	Specimen dropped particles, which did NOT ignite cotton
3	Specimen dripped particles, which IGNITED cotton
4	Flowing combustion which went past the 60 mm gauge mark
5	Failed to burn below the 120 mm gauge mark, can not be extended
6	Other

*** MISCE. MEASUREMENTS ***

MeasurementName	Measurement Value	
	168h/23°C	168h/70°C
Acidfast Temperature [°C]	168	168
Acidfast Humidity [%RH]	65	65
Optical Density Transmittance [%]	10	10
Cotton Desiccator Humidity [%RH]	10	10

UL International Germany GmbH
E:tlto@ul.com | W:www.ulfo.com | ul.com

tesa® flameXtinct

Introducing flame retardant and halogen-free mounting

Proven reliability and safety where it matters most

To ensure health and asset protection, fire safety regulations are of special importance in a variety of industries, such as aviation, trains, marine, building & construction, elevators, automotive & mobility. These regulations define precise standards for manufacturing processes and all integrated materials, such as self-adhesive tapes used for demanding mounting applications of various components. Our tesa® flameXtinct assortment complies with fire regulation standards and all tapes are halogen-free, which supports smoke reduction and less gas toxicity. Since the majority of fire-related fatalities is caused by the inhalation of toxic fumes, international regulations strive to restrict the use of certain halogenated products in the future.

tesa® flameXtinct in a nutshell

- Tested acc. to UL94 and IAD 25.85-366 app. 7 part1, 16 (1) if approved for self-adhesive flame retardant requirements!
- All products are halogen-free to reduce smoke and toxicity
- High performance acrylic adhesives ensure reliable long-term bonding and outstanding performance on a variety of surfaces
- An extended range of distinct products to offer the right solution for each application

- **Ongoing projects should be maintained in CRM (product number or Flame Retardant as keyword)**

⇒ This will help us with monitoring activities and supporting projects



- **If you have further questions, please reach out to your local colleagues:**

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Regional Market Segment Manager
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Product and Assortment Manager
IGM Europe:

Mail: Daniel.Mellentin@tesa.com





Thank you for your attention!