

This selection guide will help you to find the correct moulded shape for your application:

Step 1. Product Style

Use the Selection Guide Overview on page 12 to quickly select a suitable product profile.

Step 2. Product Size

Choose the correct dimensions to meet your application from our sizes and types table which appears on the relevant product profile page.

An example of these tables is shown below:

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 15%	T ± 0.8	JO ± 10%	HW ± 1.5	JW ± 0.8	S ± 1.5
313F322	23.8 (.93")	9.9 (.39")	17.2 (.67")	6.6 (.26")	105.9 (4.13")	11.6 (.45")	1.3 (.05")	86.3 (3.37")	1.5 (.06")	1.5 (.06")	1.5 (.06")
313F332	27.1 (1.06")	13.2 (.51")	20.8 (.81")	7.6 (.30")	121.1 (4.72")	12.1 (.47")	1.3 (.05")	98.5 (3.84")	1.5 (.06")	1.5 (.06")	1.5 (.06")

Step 3. Material/ Adhesive

Choose a material and adhesive to meet your application requirements from the tables on page 14/15.

Further combinations are available.

Here is an example:

Combinations "On request"			
Adhesive	Material		
	9	8	6
TSA-200	•	•	•
-450	•	-	•
-250	•	-	•
W24	•	-	•
V9500	•	•	•
HMT200A	•	•	•
Without Adhesive	•	•	•

These symbols denote the material or adhesive availability for each profile type. In this example the adhesive W24 is not available with the material 8 because of the "-".

But it is available with the material 9 and 6 because of the "•".

3.1 Material

Parts can be supplied in a choice of materials. The "combinations" table on each product page provides a quick and easy material recognition guide for the product profiled.

On page 14 you will find detailed information on our range of materials.

3.2 Adhesive

To maximise environmental protection and strain relief we recommend the use of an adhesive from our range below.

Pre-lined hot melt adhesive: **Component adhesive:**

- | | |
|---|--|
| <ul style="list-style-type: none"> • WM250 • W • W2 • W8 • W21 | <ul style="list-style-type: none"> • HMT200A • W24 • V9500 • TSA-200 |
|---|--|

For further information on adhesives please refer to page 15.

Step 4. Standard combinations

Standard Combinations	
Type	Article Number
217-2-B7	402-17014
218-2-B7	402-18020
219-2-B7W	402-19039
220-1-B7	402-20008
216-3-B7	402-16057

To help you with your decision we offer standard combinations for each product type.

In this example we offer the Type 219-2 in B7 material and with the adhesive W.

5. Special Modifications

Filler ports and drain holes are also available where the injection of potting epoxy is required.

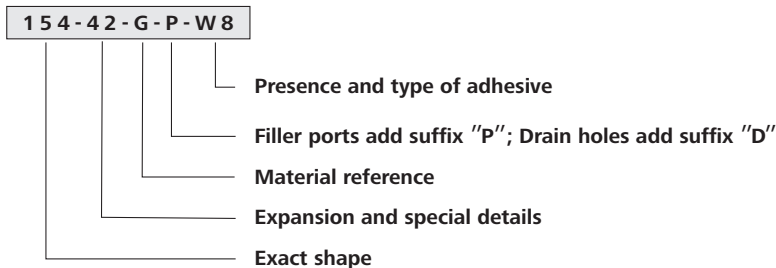
P = Filler ports for potting – 3mm Ø vent and 4.5mm Ø filler.

D = Drain holes for offset – 3mm Ø at H end equally spaced 90° apart.


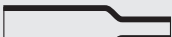
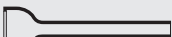
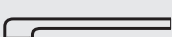
6. Ordering Procedure

When ordering heat shrinkable shapes, it is necessary to give a complete part number to enable efficient processing of your order. Part numbers can be made up of the following typical components:




Example:






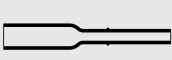



Low Profile Boots and Transitions

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Low Profile Boots and Transitions








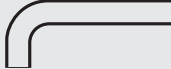

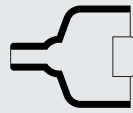





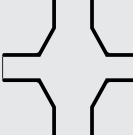



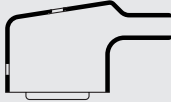



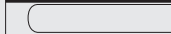

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Bulbous Boots and Transitions

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Materials for Heat Shrinkable Moulded Shapes

Material Specifications				
	L	H	G	B7
Material	Flexible flame retarded fluoroelastomer	Flexible limited fire hazard material	Fluid resistant elastomer	Semi-rigid flame retarded polyolefin
Operating Temperature	-67°F to +392°F (-55°C to +200°C)	-67°F to +221°F (-55°C to +105°C)	-103°F to +302°F (-75°C to +150°C)	-67°F to +275°F (-55°C to +135°C)
Min. Shrink Temperature	+347 °F (+175 °C)	+275 °F (+135 °C)	+275 °F (+135 °C)	+275 °F (+135 °C)
Specifications	DEF STAN 59-97, BSG198 Part 5, Type DD, MIL-81765/4	DEF STAN 59-97, BSG198 Part 5, Type DF, VG95343 pt 29, NAVSEA 5617649	DEF STAN 59-97, BSG198 Part 5, Type DE, VG 95343 Part 6, 18	MIL-I-81765/1 Type 1, DEF STAN 59-97, BSG198 Part 5, Type DA
Tensile Strength	12 MPa	10 MPa	15 MPa	13 MPa
Elongation at break	300 %	450 %	580 %	500 %
Dielectric Strength	8 kV/mm	15 kV/mm	14 kV/mm	14 kV/mm
Flammability for Material	Excellent	Excellent	Excellent	Excellent
Features	High temperature excellent chemical resistance	Low smoke Halogen free	Excellent resistance to fuels	Good physical and chemical resistance
Typical Application	Military and high performance harnessing	Ships, submarines and railways	Military and general high performance harnessing	Military and general high performance harnessing

Material Specifications					
	J	B8	-8	-9	-6
Material	Flexible polyolefin	Semi-rigid flame retarded polyolefin	Modified fluoroelastomer	Modified elastomer blend	Flexible flame retarded polyolefin
Operating Temperature	-67°F to +275°F (-55°C to +135°C)	-67°F to +212°F (-55°C to +100°C)	-67°F to +302°F (-55°C to +150°C)	-67°F to +248°F (-55°C to +120°C)	-67°F to +248°F (-55°C to +120°C)
Min. Shrink Temperature	+275 °F (+135 °C)	+275 °F (+135 °C)	+275 °F (+135 °C)	+275 °F (+135 °C)	+275 °F (+135 °C)
Specifications	MIL-I-81765/1 Type 2, DEF STAN 59-97, BSG198 Part 5, Type DB	EA-TS 09-11	SCX15111	SCX15112	MIL-I-81765/1 Type 1, MIL-I-81765/1 Type 2
Tensile Strength	14 MPa	15 MPa	15 MPa	12 MPa	12 MPa
Elongation at break	610 %	500 %	450 %	500 %	500 %
Dielectric Strength	12 kV/mm	15 kV/mm	20 kV/mm	20 kV/mm	20 kV/mm
Flammability for Material	excellent	good	<25mm	excellent	excellent
Features	Flexible	Good physical and reasonable chemical resistance	Good physical and reasonable chemical resistance	Good physical and reasonable chemical resistance	Good physical and reasonable chemical resistance
Typical Application	Military and high performance harnessing	Power/utility shapes	Military and general high performance harnessing	Military and general high performance harnessing	Military and general high performance harnessing

Adhesive for Heat Shrinkable Moulded Shapes

Adhesive Specifications				
	W / W2	W8	W21	W24
Adhesive	General purpose hot melt adhesive	High performance EVA hot melt adhesive	Modified polyamide hot melt adhesive	High performance, pre-coat, 1 part epoxy
Operating Temperature	-67°F to +176°F (-55°C to +80°C)	-67°F to +221°F (-55°C to +105°C)	-67°F to +248°F (-55°C to +120°C)	-94°F to +428°F (-75°C to +200°C)
Softening Point Adhesive	+203°F (+95°C)	+230°F (+110°C)	+248°F (+120°C)	
Supplied Form	Pre-applied	Pre-applied	Pre-applied	Pre-applied
Shelf life	5 years	5 years	5 years	5 years
Solvent Resistance	Fair under splash conditions	Fair under splash conditions	Saline: Very good De-icing fluid: Good Diesel: Excellent Lubricating Oil: Good Hydraulic Oil: Excellent Aviation Fuel: Good Automotive Fuel: Good	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent

Adhesive Specifications					
	450	TSA200	WM250	V9500	HMT200A
Adhesive	EVA hot melt adhesive	Thermoset +125° C	Hot melt adhesive	Two part, black, epoxy adhesive	Hot melt adhesive tape
Operating Temperature	-67°F to +221°F (-55°C to +105°C)	-67°F to +257°F (-55°C to +125°C)	-67°F to +176°F (-55°C to +80°C)	-103°F to +302°F (-75°C to +150°C)	-67°F to +221°F (-55°C to +105°C)
Softening Point Adhesive	+230°F (+110°C)	+203°F (+95°C)	+203°F (+95°C)		+230°F (+110°C)
Supplied Form	Pre-applied	Tape	Pre-applied	Cardridge	Tape
Shelf life	5 years	5 years	5 years	18 months	5 years
Solvent Resistance	Fair under splash conditions	Fair under splash conditions	Fair under splash conditions	De-icing fluid: Excellent, Petrol: Excellent, Lubricating Oil: Excellent, Hydraulic Oil: Excellent	Fair under splash conditions



Use this table to find the adhesive compatibility for your preferred material.

Material Combinations	Material			
	G	B7	B8	H
Material Description	Fluid resistant elastomer	Semi -rigid flame retarded polyolefin	Semi -rigid flame retarded polyolefin	Flexible limited fire hazard polyolefin
Shape				
Minimum Shrink Temperature	+275°F (+135°C)	+275°F (+135°C)	+275°F (+135°C)	+275°F (+135°C)
Operating Temperature Range	-103°F to +302°F (-75°C to +150°C)	-67°F to +275°F (-55°C to +135°C)	-67°F to +212°F (-55°C to +100°C)	-67°F to +221°F (-55°C to +105°C)
Shelf Life	5 years	5 years	5 years	5 years
Helashrink 100 Series	yes	yes	no	yes
Helashrink 1100 Series	yes	yes	no	yes
Helashrink 200 Series	yes	yes	no	yes
Helashrink 300 Series	yes	yes	no	yes
Helashrink 400 Series	yes	yes	no	yes
Helashrink 1200 Series	yes	yes	no	yes
Helashrink 1300 Series	yes	yes	no	yes
Low Profile Shapes (Series 313, 412, 492, 573)	no	no	no	no
Helashrink 1600 Series	no	no	yes	no
Helashrink In Line Series, low voltage	no	no	yes	no
Adhesive Compatibility	WM250	WM250	WM250	WM250
	W8	W8	W8	W8
	W24	W24		W24
	V9500	V9500		W21
	HMT200A	HMT200A	HMT200A	HMT200A

Material Combinations	Material			
	L	-9	-6	-8
Material Description	Flexible flame retarded fluoroelastomer	Modified elastomer blend	Flexible flame retarded polyolefin	Fluoro-elastomer polymer blend
Shape		low profile	low profile	low profile
Minimum Shrink Temperature	+347°F (+175°C)	+275°F (+135°C)	+275°F (+135°C)	+275°F (+135°C)
Operating Temperature Range	-67°F to +392°F (-55°C to +200°C)	-67°F to +248°F (-55°C to +120°C)	-67°F to +248°F (-55°C to +120°C)	-67°F to +302°F (-55°C to +150°C)
Shelf Life	5 years	5 years	5 years	5 years
Helashrink 100 Series	yes	no	no	no
Helashrink 1100 Series	yes	no	no	no
Helashrink 200 Series	yes	no	no	no
Helashrink 300 Series	yes	no	no	no
Helashrink 400 Series	yes	no	no	no
Helashrink 1200 Series	yes	no	no	no
Helashrink 1300 Series	yes	no	no	no
Low Profile Shapes (Series 313, 412, 492, 573)	no	yes	yes	yes
Helashrink 1600 Series	no	no	no	no
Helashrink In Line Series, low voltage	no	no	no	no
Adhesive Compatibility	W24 V9500	WM250 W8 W24 V9500	WM250 W8 W24 V9500	TSA200
		HMT200A	HMT200A	
		TSA200	TSA200	



Use this table to find the material compatibility for your preferred adhesive.

Adhesive Combinations	Material			
	W / W2	WM250	W8	W21
Adhesive Description	General purpose hot melt adhesive	General purpose hot melt adhesive	EVA, high performance, hot melt adhesive	Modified polyamide hot melt adhesive
Operating Temperature Range	-67°F to +176°F (-55°C to +80°C)	-67°F to +176°F (-55°C to +80°C)	-67°F to +221°F (-55°C to +105°C)	-67°F to +248°F (-55°C to +120°C)
Softening Point	+203°F (+95°C)	+203°F (+95°C)	+230°F (+110°C)	-
Supplied Form	pre-applied	pre-applied	pre-applied	pre-applied
Shelf Life	5 years	5 years	5 years	5 years
Solvent Resistance	Fair under splash conditions	Fair under splash conditions	Fair under splash conditions	Saline: Very good De-icing fluid: Good Diesel: Excellent Lubricating Oil: Good Hydraulic Oil: Good Aviation Fuel: Good Automotive Fuel: Good
Helashrink 100 Series	no	yes	yes	yes
Helashrink 1100 Series	no	yes	yes	yes
Helashrink 200 Series	no	yes	yes	yes
Helashrink 300 Series	no	yes	yes	yes
Helashrink 400 Series	no	yes	yes	yes
Helashrink 1200 Series	no	yes	yes	yes
Helashrink 1300 Series	no	yes	yes	yes
Low Profile Shapes (Series 313, 412, 492, 573)	no	yes	yes	yes
Helashrink 1600 Series	yes	yes	no	no
Helashrink In Line Series, low voltage	yes	yes	no	no
Material Compatibility	B8	G	G	G
		B7	B7	B7
		B8	H	B8
		H	6	H
		6	9	
		9		



Adhesive Combinations	Material			
	W24	TSA-200	V9500	HMT200A
Adhesive Description	High performance, pre-coat, 1 part epoxy	Thermoset +125°C	Two part, black, epoxy adhesive	Hot melt adhesive tape
Operating Temperature Range	-103°F to +392°F (-75°C to +200°C)	-67°F to +257°F (-55°C to +125°C)	-103°F to +302°F (-75°C to +150°C)	-67°F to +221°F (-55°C to +105°C)
Softening Point	-	-	-	-
Supplied Form	pre-applied	Tape	Cartridge	Tape
Shelf Life	5 years	5 years	18 months	5 years
Solvent Resistance	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions
Helashrink 100 Series	yes	no	yes	yes
Helashrink 1100 Series	yes	no	yes	yes
Helashrink 200 Series	yes	no	yes	yes
Helashrink 300 Series	yes	no	yes	yes
Helashrink 400 Series	yes	no	yes	yes
Helashrink 1200 Series	yes	no	yes	yes
Helashrink 1300 Series	yes	no	yes	yes
Low Profile Shapes (Series 313, 412, 492, 573)	yes	yes	yes	yes
Helashrink 1600 Series	no	no	no	yes
Helashrink In Line Series, low voltage	no	no	no	yes
Material Compatibility	G	6	G	G
	B7	9	B7	B7
	H	9	H	B8
	L		J	H
	6			6
	9			9
	J			8
				J