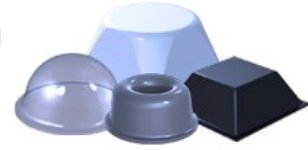


Technical Data
March 2018

BumperStop® Protectors are strong, flexible and highly resilient. Among their many features is their ability to withstand shock and vibration whilst being both non-slip and non-marking.

BumperStop® Protectors are supplied kiss-cut on a sheet to allow ease of removal and aid the speed of application. Manufacturing so many different shapes, colours and styles the standard quantity on a sheet will always vary depending the size of the part.



Specific information on the number of pieces on a sheet and sheets in each box can be found in the product pages on our website or corporate brochure. The Information in our brochure and marketing literature will not apply to custom sheet sizes or parts. Ask sales for details

Polyurethane Physical Properties

Property	Test Method	Clear	Coloured
Hardness (shore A)	ASTN D-2240	66-70	66-70
Tensile Strength (Mpa)	BS903	4.5MN/m2	4.5MN/m2
Elongation (%)	BS903	193	193
Tear Strength (KN/m)	BS903	14.4	14.4
Abrasion Resistance (MG loss)	BS EN 5470-1:1999	150	150
Load Tolerance 21°C to 60°C		Min 3 Mpa	Min 3 Mpa
Flame Retardency	UL94HB (in house)	Pass	Pass
Kinetic Coefficient of friction	ASTM D-1894-78		
	A Stainless Steel	2.52	2.52
	B Glass	2.7	2.7
	D High impact polystyrene	2.37	2.37

Shelf-Life - 12 months when stored in original packaging at room temperature

Exposure to the Environment Bumperstops are intended for interior applications where physical properties will remain unchanged. When used externally for extended periods, some discolouration as well as loss of adhesion may occur.

Load Tolerance Information

In the event Bumperstop® Protectors are used for applications involving the support of heavy plate glass or similar, laboratory tests have shown that cylindrical shapes perform better than hemispherical.

A heavy load supported by the wrong style of BumperStop protector could result in fracturing or "crumbling" of the polyurethane material. Please refer to the chart for weight loading guidance.

Compression tests were carried out at ambient temperature (24°C)

Product	Colour	Profile	Kg per part	Product	Colour	Profile	Kg per part
PD.2010C	Clear	Hemispherical	2	PD.2191C	Clear	Cylindrical	12
PD.2115C	Clear	Hemispherical	3	PD.2019C	Clear	Cylindrical	12
PD.2150C	Clear	Hemispherical	4	PD.2100C	Clear	Square	6
PD.2120C	Clear	Cylindrical	4	PD.2127C	Clear	Square	6
PD.2125C	Clear	Cylindrical	6	PD.2205C	Clear	Square	12

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In all cases the customer must determine the suitability of any of our materials for their application. BumperStop® Protectors are REACH, RoHS and Wee compliant.

Pressure Sensitive adhesive data

4001 Acrylic (Standard adhesive on all CLEAR Protectors)

4001 adhesive is a medium-tack adhesive with higher end use temperature and good clarity. Usually preferred for Applications where good ageing properties are required. Unless otherwise requested this adhesive is standard on all clear BumperStop® Protectors.

4002 Acrylic (Standard adhesive on all COLOURED Protectors)

4002 adhesive is a high tack adhesive which displays good instant tack as well as good peel and shear properties. Unless otherwise requested this adhesive is standard for all coloured BumperStop® Protectors.

Peel & Shear Data

- **FINAT 1** : 90° Peeling test, 300mm/min.

Samples width: 25x145mm – Load 2 back and forth with roll of 2 kg

- **FINAT 8** : Shear test

Samples width: 25x25mm – Load 2 back and forth with roll of 2 kg

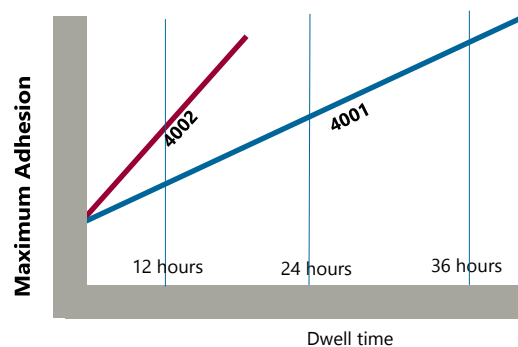
Surface Material	Test Method	4001 Acrylic Standard on Clear BumperStops®		4002 Acrylic Standard on Coloured BumperStops®	
		20min 23°C 50% RH	24h 23°C 50% RH	20min 23°C 50% RH	24h 23°C 50% RH
Stainless Steel	Peel FINAT 1 Unit N/25mm	13.6	22.2	12.8	15.5
Aluminium		15.6	21.2	7.8	14.0
Glass		17.6	22.3	17.0	19.3
HPDE		1.6	2.4	3.8	3.8
Polystyrene		8.1	15.2	15.3	17.3
ABS		7.9	17.5	12.8	19.5
Stainless Steel	Shear FINAT 8	-	EC>67h	-	>300h

Load Tolerance Information

Please refer to the chart which illustrates the relative adhesion properties of the adhesive systems used in the production of BumperStop® Protectors.

In general terms allow time (dwell) to increase the surface contact and therefore the adhesion.

We always recommend customers carry out their own tests to ensure suitability because application conditions will vary.



APPLYING BumperStop® Protectors

It is important to remember, that as with any self adhesive product, the surface to which they are being applied must be clean, dry and free from dust and dirt. Therefore, to gain maximum adhesion, clean the surface with low strength solvent and allow to dry thoroughly before use. Please follow solvent manufacturers' instructions for safety.

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Temperature Data (Application)

Usual application temperature advised for pressure sensitive adhesives are 20-40°C. We do not advise application at higher temperature.

Concerning lowest temperature, tests have been carried out to evaluate the impact of lower temperature on initial adhesion. Indeed, the major risk is a lack of adhesion when temperature decreases.

Test description

- Adhesive and plates are stored for at least 2h at tested temperature
- 90° peeling test on stainless steel after 1 min at 23°C.
- 90° Peeling test on stainless steel after 1 min at 10 or 15°C.

By comparison we can evaluate low temperature impact on initial adhesion.

Adhesion after 1min (N/25mm)	4001 Acrylic Standard on Clear Protectors	4002 Acrylic Standard on Coloured Protectors
23°C	12.3	10.6
15°C	-	8.8
10°C	11.5	-

If used at lower temperatures the result would be a reduction of around 20%.

Temperature Data (Service)

Test description:

This test is based on the evaluation of adhesion performances after an exposure at low or elevated temperature.

- 90° Peeling test on stainless steel is carried out after 24h at 23°C
- Same test is carried after 24 h at 23°C + 2h at low or elevated temperature

(for example, extreme value -40°C / +120°C)

If the performance of adhesion is compared **with and without** temperature exposure then:

	4001 Acrylic Standard on Clear Protectors	4002 Acrylic Standard on Coloured Protectors
Minimum Service Temperature	- 40°C	- 30°C
Maximum Service Temperature	+ 120°C	+ 100°C

APPLYING BumperStop® protectors

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