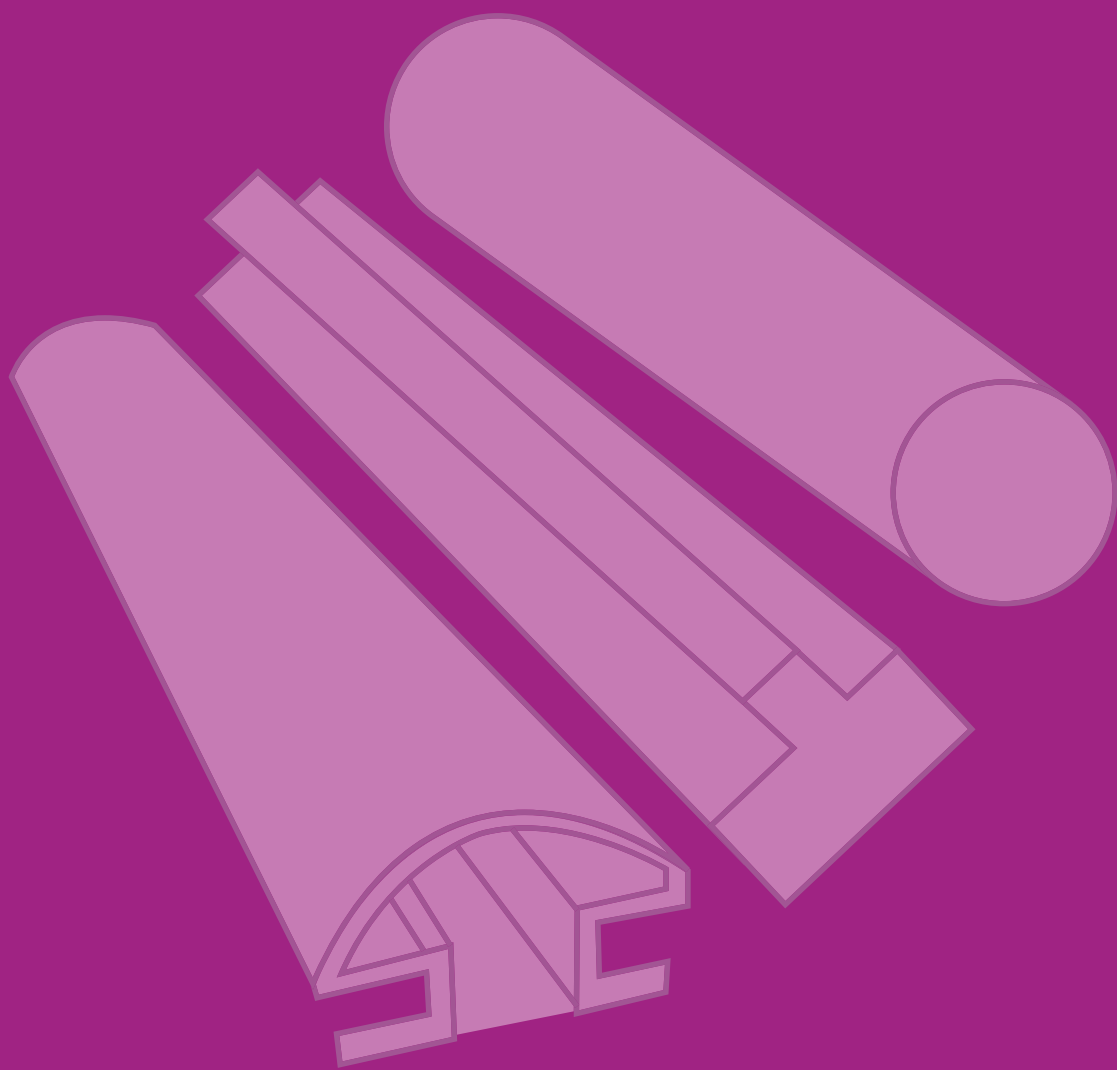


**dryflex<sup>®</sup>**



# EXTRUSION PROFILES



## Introduction

Due to their efficient processing, high performance and recyclability, Dryflex® Thermoplastic Elastomers (TPEs) have made significant progress in proving themselves as a quality replacement for vulcanised rubber in window and door sealing applications.

Colour and co-extrusion possibilities have further enhanced the design possibilities for gaskets and seals made from TPE. New technologies such as Dryflex® XP foamable TPEs and higher temperature resistant grades are providing materials which deal with design, performance and the environmental needs of the future.

The VTC TPE Group has supplied compounds for gaskets and weatherstrip extrusion for over 15 years; we are a trusted partner to the construction industry.

Today, we continue to develop technical material solutions to meet every application need. Some of the potential property spectrum and possibilities are shown below.

### Colours

Black, natural and coloured compounds are available. If co-extruded, the rigid strips can be colour coded for easy identification of the profile during fabrication.

### Hardness

A wide range of different hardnesses is available from 7 Shore A to 60 Shore D.

### Heat Weldability

Most available gasket grades are heat weldable.

### Standards

Dryflex® grades are approved according to BSI, BBA and RAL standards.

Country	Standard
Germany	RAL – GZ 716/1
United Kingdom	BS 7412:2002 Class A and B
France	Norme Internationale ISO/DIS 3934 (F) (To be finalised)

## Made to Measure

Through our world-class laboratories and testing facilities we work with customers on part design and the identification of material solutions that precisely match their application requirements. And, where an existing TPE grade cannot satisfy the specific demands of a new complex part, we have the proven expertise to customise a material that will.



## Foamable Grades

Dryflex® XP represents a new generation of expandable TPEs. The grades were developed primarily for extruded seals, but can also be injection moulded. Hardness and the degree of foaming can be formulated to influence the profiles' sealing force and deformation recovery.

Using chemical or water blown techniques it can be difficult to obtain a good surface finish, without streaks or roughness. Dryflex® XP can produce profiles with acceptable surface smoothness, and without the need to co-extrude a surface solid skin.

Typical extruded seals for construction require a low hardness. Very low density products, as low as 0.4 g/cm<sup>3</sup> can be manufactured with low hardness, normally 10 to 20 Shore A.

## Co-extrusion

Dryflex® is easily co-extruded with harder materials such as polypropylene (PP), polyethylene (PE) or with semi-rigid TPEs to produce profiles with a rigid reinforcement. This can be used to act as a locking or as an anti-stretch mechanism. These rigid strips can be colour coded for easy identification of the profile during fabrication.

## New Developments

New compounds are continuously developed to maintain the best cost and performance fit. In the formulation of a Dryflex® TPE for construction gaskets, three key properties are considered, which will reflect the choice of raw material:

- **Requirements of the standard** – compression set, UV stability, ozone resistance and polycarbonate compatibility for example.
- **Processing** – die swell, extrusion speed, surface finish, weldability and paintability.
- **Cost** – meeting the standard at an acceptable price to the customer.

## Processing

Glazing gaskets grades of Dryflex® can be easily processed using conventional thermoplastic equipment for extrusion. The thermoplastic characteristics result in fast extrusion rates and total scrap recycling.

The glazing gaskets compounds do not require pre-drying prior to processing. Processing of foamable TPE's is carried out by increasing the melt temperature to the material to allow forming by extrusion, but restricting the material temperature below the blowing agent expansion temperature until the material is exiting the die.

## Recyclability

Dryflex® grades are totally recyclable and can be reprocessed and regenerated to produce functional gasket products.



## Dryflex® Glazing Gasket Grades

In the tables on the following pages some examples of different Dryflex® glazing gasket grades are shown.

### Trade Standard Grades

#### BS 7412

These grades were developed to meet the requirements of BS 7412:2002 Class A or B standard and are suitable for 'static' (Class A) or 'dynamic' (Class B) applications.

Grade	Class A or B	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 5kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/24h %
Test Method	BS 7412	ISO 868	ISO 2781	ISO 1133	ISO 37	ISO 37	ISO 37	ISO 37	ISO 34 Method C	ISO 815 Type B
4050 <sup>1</sup>	A	65	1.08	8	2.3	3.0	700	5.0	28	25
4057	A+B	70	1.11	19 <sup>2</sup>	2.6	3.4	417	5.0	27	23
4058	A	55	1.09	8	1.8	2.5	600	3.5	22	27
4059	A	50	1.09	15	1.4	1.9	650	3.2	18	20
4060 <sup>1</sup>	A+B	62	1.09	5	2.1	2.9	700	5.5	25	20
4067 <sup>1</sup>	A+B	77	1.13	5 <sup>2</sup>	3.6	5.0	450	6.7	37	23
4068	A+B	53	1.06	7	1.4	2.1	700	3.5	21	24
4096	A+B	42	1.09	9	1.0	1.7	700	5.0	17	16

<sup>1</sup> BS 7412 Certificate available <sup>2</sup> 10kg at 190°C. Figures are indicative and can vary depending on the specific grade selected.

Cold blend temperature: <-60°C applicable (BS 2782 Part 1, 15A).

Ozone resistance (ISO 1431/1): No cracking.

Available colours: black and natural, other colours on request.

#### RAL-GZ 716/1

These grades were developed to meet the requirements of RAL-GZ 716/1, Class IV (and Class V) standard

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 5kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/24h %
Test Method	ISO 868	ISO 2781	ISO 1133	ISO 37	ISO 37	ISO 37	ISO 37	ISO 34 Method C	ISO 815 Type B
4090 <sup>1</sup>	57	1.08	10	1.4	2.4	700	7.8	22	20
4092	65	1.10	11	1.9	3.2	620	7.5	27	22
4093	80	1.11	13	3.1	4.5	620	8.5	37	28
4094 <sup>1</sup>	62	1.09	11	1.7	2.8	680	7.5	25	20
4096	42	1.09	9	1.0	1.7	700	5.0	17	16

<sup>1</sup> RAL-GZ 716/1 Certificate available. Figures are indicative and can vary depending on the specific grade selected.

Available colours: black and natural, other colours available on request.



## General Grades

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 5kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/24h %
Test Method	ISO 868	ISO 2781	ISO 1133	ISO 37	ISO 37	ISO 37	ISO 37	ISO 34 Method C	ISO 815 Type B
4103	70	1.10	9 <sup>1</sup>	2.4	2.9	575	4.0	25	29
50225	58	1.13	10	1.7	2.2	400	3.0	19	27
50670	60	1.11	12	1.6	2.2	340	3.0	23	26

<sup>1</sup>) 2.16kg at 190°C

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 10kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/72h %
Test Method	ASTM D 2240 <sup>1</sup>	ASTM D 792	ASTM D 792	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 624	ASTM D 395
605550	55	1.05	1.5 <sup>2</sup>	1.6	2.9	600	6.0	25	13
605620	62	1.22	25	2.0	3.0	600	5.0	27	13
660480	48	1.04	23	1.3	2.6	600	5.2	22	12
600581	58	1.18	15	2.0	2.0	500	6.0	30	15
700541	54	1.17	3.5	1.7	2.8	700	5.5	28	20

<sup>1</sup>) 4mm

<sup>2</sup>) 5kg at 190°C

Figures are indicative and can vary depending on the specific grade selected.

Ozone resistance: Excellent

Available colours: White and natural, other colours available on request

## Translucent Grades

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 5kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/72h %
Test Method	ASTM D 2240 <sup>1</sup>	ASTM D 792	ASTM D 792	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 624	ASTM D 395
500551	55	0.9	1 <sup>2</sup>	2.0	3.0	600	6	19	18
500701	72	0.9	5	3.0	4.0	760	14	35	28
500850	85	0.9	17	4.4	5.9	800	14	40	-
500900	90	0.9	4	4.4	6.1	800	14	42	37
938012	65	0.89	1	2.0	4.0	600	10	35	1

<sup>1</sup>) 4mm

<sup>2</sup>) 10kg at 190°C

Figures are indicative and can vary depending on the specific grade selected.

Ozone resistance: Excellent

Available colours: White and natural, other colours available on request



## Semi-Rigid Grades

The semi-rigid compounds will easily co-extrude with flexible Dryflex® compounds.

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 5kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/24h %
Test Method	ISO 868	ISO 2781	ISO 1133	ISO 37	ISO 37	ISO 37	ISO 37	ISO 34 Method C	ISO 815 Type B
4093	80	1.11	13	3.1	4.5	620	8.5	37	28
9012	92	0.89	2.0 <sup>1)</sup>	9.5	-	900	14.5	-	-

<sup>1)</sup> 5kg at 230°C

Figures are indicative and can vary depending on the specific grade selected.

Ozone resistance (ISO 143/1): No cracking

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 10kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/72h %
Test Method	ASTM D 2240 <sup>1)</sup>	ASTM D 792	ASTM D 792	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 624	ASTM D 395
600861	86	1.16	30	5.0	6.0	600	13	50	30
600911	91	1.16	40	5.0	6.0	600	13	50	30

<sup>1)</sup> 4mm

Figures are indicative and can vary depending on the specific grade selected.

Ozone resistance: Excellent

Available colours: Black and natural, others available on request

## Rigid Grades

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 10kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/72h %
Test Method	ASTM D 2240 <sup>1)</sup>	ASTM D 792	ASTM D 792	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 628	ASTM D 624	ASTM D 395
966042	39 D	0.96	6	8.0	9.0	600	18	65	-
966043	39 D	0.96	6	8.0	9.0	600	18	65	-

<sup>1)</sup> 4mm

Figures are indicative and can vary depending on the specific grade selected.

Ozone resistance: Excellent

Available colours: Black and natural, others available on request



## Dryflex® XP - Foamable TPE Grades

The expandable compounds, Dryflex® XP, can be foamed with or without co-extruded skin, to produce resilient low density gaskets that require low closure forces.

Grade	Hardness Shore A	Specific Gravity g/cm <sup>3</sup>	MFR 5kg at 190°C g/10 min	Modulus 100% MPa	Modulus 300% MPa	Elongation at Break %	Tensile Strength MPa	Tear Strength N/mm	Comp. Set 23°C/24h %
Test Method	ISO 868	ISO 2781	ISO 37	ISO 37	ISO 37	ISO 37	ISO 37	ISO 34 Method C	ISO 815 Type B
XP 0801	8	0.45	-	-	-	-	-	-	8
XP 1501	15	0.45	-	-	-	-	-	-	8

*All the information about chemical and physical properties consists of values measured in tests on injection moulded test specimens. We provide written and illustrated advice in good faith. This should only be regarded as being advisory, and does not absolve the customer from undertaking their own tests and trials to determine the suitability of the material for the intended applications. We retain the right to make changes without prior notice.*

Vita Thermoplastic Polymers (VTP) and VTC Elastoteknik AB are members of the VTC TPE Group

**Vita Thermoplastic Polymers (VTP)**

United Kingdom

t : 44 (0)161 654 6616

f : 44 (0)161 654 2333

sales@vtctpe.com

**VTC Elastoteknik AB**

Sweden

t : 46 (0) 532 60 75 00

f : 46 (0) 532 60 75 99

info@elastoteknik.se

**Paris Office**

France

t : 33 (0) 160 43 17 17

f : 33 (0) 160 43 11 13

pgruyer@aol.com

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