



TPE Extrusion Series

ENFLEX[®]
& EZPRENE[®]
TPV

ENSOFT[®]
TPE-S





RAVAGO TURKEY TPE

Ravago, which started its production activities in Turkey in 2001, gathered all plastic raw material production companies in Turkey under Ravago Petrokimya A.Ş. Today, Ravago Petrokimya having its own R&D center, is among the most important plastic raw material producers in Europe, operating on a total area of 255.000 m² in its Taysad, Kocaeli and Aliaga, İzmir production facilities.

Our company started its first production activities in Gebze, Kocaeli in 2001 in the field of Thermoplastic Elastomer business. As of 2019, Ravago Petrokimya is the leading and highest technology production facility in Turkey and our group thanks to its industry 4.0 automation system integrated compounding plant in Aliaga / İzmir.

In our R&D center, founded in 2017, with our technically experienced employees and vast knowledge, we also provide service to every special product request and solution to every kind of process improvement in addition to our wide product range that we have accessed. Our close cooperation with the leading OEMs and suppliers of the industries we have worked with, and our collaborations with universities enable us to take a position for the future.

Our ISO 9001:2000 certified production system, which we have established on meeting the needs of our customers in the most perfect way and on continuous development, has been reinforced with the ISO/TS 16949 certificate as our products are widely used in the automotive industry. We are preparing for the needs of the future with our continuous development projects of production technology, raw material resources and human resources, which are the real basis of the quality of our products and services. Our company, which always keeps the issue of compliance with the environment and specifications on its agenda, has documented its production process in accordance with ISO 14001 standards. With the same understanding, our products are formulated in accordance with REACH and ROHS directives.

INTRODUCTION

TPE-S ENSOFT® and

TPE-V ENFLEX® & EZPRENE® products provide excellent performance and easy manufacturability, especially to window and weather seal manufacturers.

With the optimum price-quality balance and compliance with international certificates, they are completely recyclable materials and can be seen as quality alternative products instead of PVC and rubber materials.

Sustainable and Tailored Solutions

We always offer alternative solutions with years of trust and TPE compound knowledge. While we continue to offer products on sustainable environmental solutions, recycled materials or weight-reduced solutions, our R&D is carried out in special projects to meet the special expectations of our customers.

While Ravago TPE products offer ENSOFT and ENFLEX grades in a wide range of hardness, these products can be easily extruded with conventional extruders.

Hardness

Ability to offer products in the range of 5SHA and 50ShD with all our TPE products.

Colorability and recyclability

While the products can be presented in different colors, especially black and natural, the products can also be colored in the processing lines.

All grades are fully recyclable and can be reprocessed to produce functional seal products.

Co-extrusion & Benefits

All Ravago products, especially PP, PE and rigid TPE can be coextruded easily with high efficiency.

ENSOFT TPE-S based grades does not need pre-drying. Normally, all TPV products require pre-drying, but with the EZPRENE product group, products can be processed without pre-drying. They stand out especially with their high mechanical strength, long-term memory properties, and resistance to external atmospheric conditions.

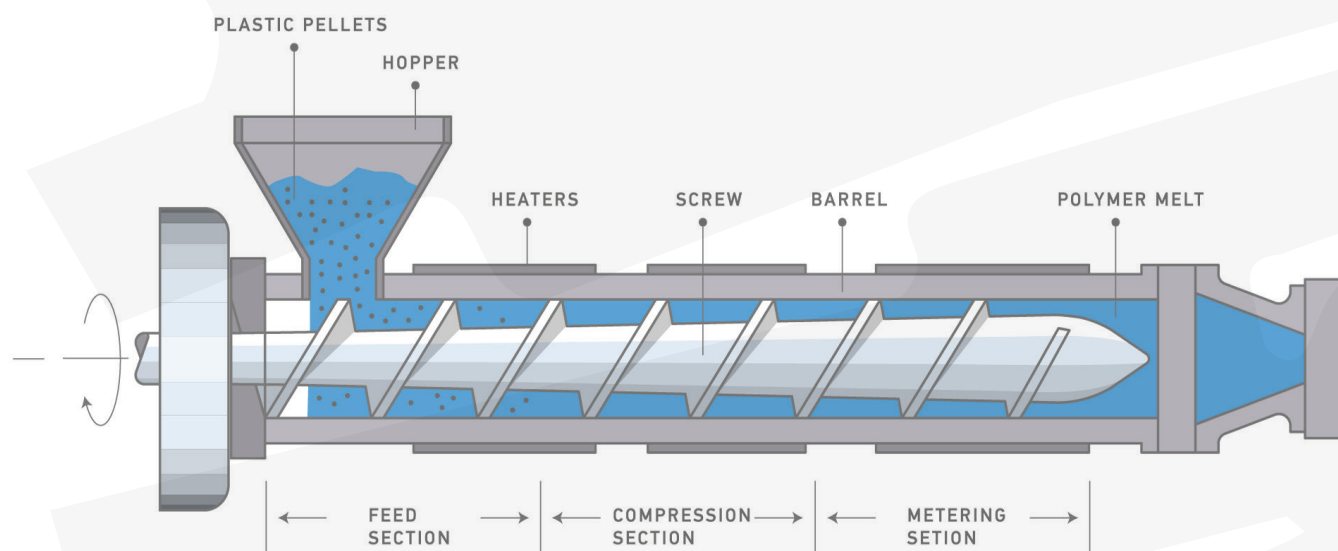
We offer the most suitable line speed, surface quality, mold swelling features to the lines of the manufacturers with the best price quality and performance criteria.



EXTRUSION

Ravago TPEs can be easily processed with standard extrusion equipment, nevertheless, to ensure proper performance it is recommended to consider the following titles.

The choice of the proper extruder size is based on various elements and can have a significant impact on the output properties and also the effectivity on the production. Selecting the right size is a function of the output with a moderate screw speed. The suitable L/D ratio depends on the requirements for venting, pressure generation and homogeneous mixing.



ENFLEX®-EZPRENE®-ENSOFT® Extrusion Series

ENFLEX & EZPRENE TPV

Equipment	EPDM-PP based compounds can be extruded on virtually all types of extruders for thermoplastics.
Length/diameter (L/D) ratio	Min. 20:1
Compression ratio	Min. 2.5:1
Melt temperature	190 - 230°C
Temperature profile	150°C at infeed zone to 210°C at the die, gives highest output
Screw design	Compression ratio should be low, the melt sections should be fairly deeply threaded, and the L/D ratio should be >20:1

*Drying	2-3 hours at 80-90 °C
Feed Throat	water cooling
Feeding zone	180-200 °C
Compression zone	190-205 °C
Metering zone	205-215 °C
Head	210-220 °C
Die	210-230 °C
Melt	190-230 °C
Screw speed	20-150 rpm

* pre-drying does not need for EZPRENE series

ENSOFT® TPE-S

Equipment	Extruders used for polyolefines are best for TPE compounds.
Length/diameter (L/D) ratio	Min. 20:1
Compression ratio	Min. 3.5:1
Melt temperature	190 – 220°C
Temperature profile	Feed Zone to Die 170, 180, 190, 200 and 210°C is suitable, can be adjusted to suit grade and screw. (Lower temperature for the softer compounds.)
Screw design	Best extruded using screws that have a high compression ratio (3:1) and long, fairly shallow feed zones. Screws with compression ratio of 3.0 – 4.5 are normally preferable. The softer compounds generally give a lower output at increased backpressure.

Drying	Not required
Screen Pack	20/40/60*
Feed Throat	water cooling
Feeding zone	170-190 °C
Compression zone	180-195 °C
Metering zone	195-205 °C
Head	200-210 °C
Die	200-220 °C
Melt	190-220 °C
Screw speed	20-150 rpm

ENFLEX® Extrusion Series

Thermoplastic Elastomer Vulcanizate Grades

Enflex-V® is our brand name for dynamically vulcanized ethylene/propylene/diene (EPDM) and Polypropylene (PP) blends. Fully cured EPDM particles that are homogenously distributed in the thermoplastic polypropylene phase give these compounds unique rubber-like properties, with the advantage of thermoplastic processing techniques. Enflex-V® range can be self-colored with the use of proper MB or provided as pre-colored compounds. Typical properties of Enflex-V® series are given below

General Properties

- Hardness range from 45 Shore A to 50 Shore D
- Service Temperature: -50°C ± 125°C (dynamic)
- -50 ± 135°C (Static/Peak)
- Excellent ozone, UV and weather resistance due to saturated elastomeric phase
- Chemical resistance to aggressive mediums
- Very low (Rubberlike) compression set and good elasticity
(that does not change significantly over time) in a wide temperature range

Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength	Compression set at
	Sh A	gr /cm3	Mpa	%	%100 Mpa	MPa	22h 23C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO37	ISO 34-1	ISO815 typeB
VL120-60A	60A	0,97	5,1	530	2,1	19	28
VL120-70A	70A	0,97	6,7	540	2,8	25	36
VL120-80A	80A	0,97	8,7	550	3,9	33	48
VL120-40D	40D	0,97	17	600	8,9	70	53
VU420-60A	60A	0,97	5,5	550	1,5	27	32
VU420-70A	70A	0,97	7	550	2,6	41	38
VU420-80A	80A	0,97	8,8	630	3,9	60	44
VU420-40D	40D	0,97	16	670	8,2	70	55

EZPRENE® Extrusion Series

Thermoplastic Elastomer Vulcanizate Grades

Most TPV products on the market are moisture sensitive. We have recently developed a new proprietary cure system and manufacturing process to make non- hygroscopic TPV products. Since these products are not hygroscopic, they do not need drying prior to thermoplastic processing.

They also exhibit improved color with low yellowness for the ability to color match a wide range of colors with very little variation or color drift. These new materials have good oil resistance and mechanical resilience properties that are superior to other TPV materials.

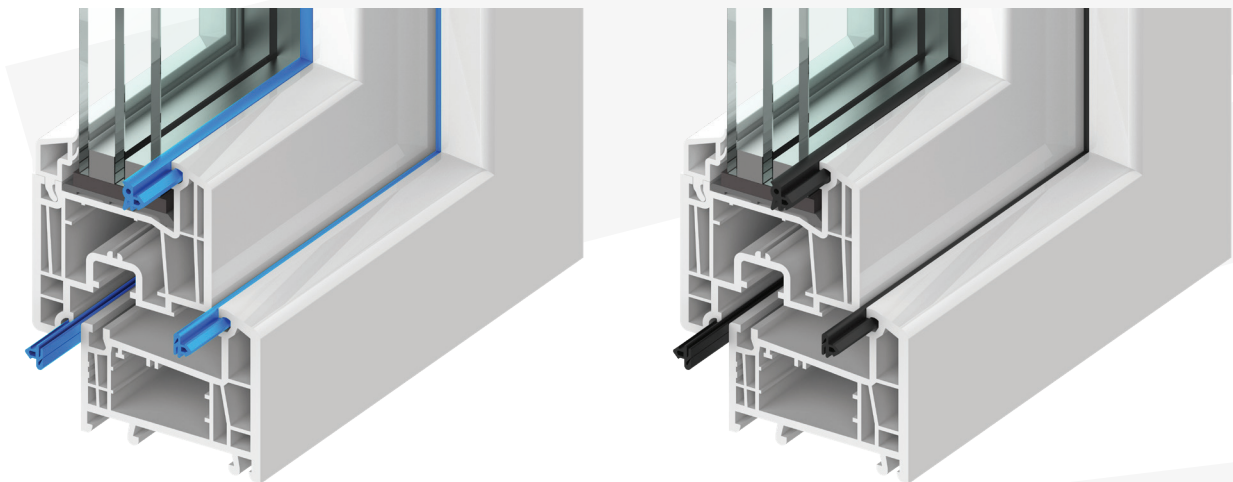
Efficient processing, excellent appearance

There are currently several grades in the new EZPrene® series, ranging in hardness from 45A- to 40D. Each material has been developed to offer injection molders lower viscosity which gives you: shorter fill times, longer flow paths, and lower injection pressures.

The new EZPrene® grades flow so much better and injection molding cycles can be as much as 25% shorter compared to traditional vulcanized thermoplastic elastomers.

Thermoplastic Elastomer Vulcanizate Grades

Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength	Compression set at
	Sh A	gr /cm3	Mpa	%	%100 Mpa	MPa	22h 23C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO37	ISO 34-1	ISO815 typeB
VL320-60A	60A	0,96	5	550	1,9	30	37
VL320-70A	70A	0,96	7,2	570	2,8	45	33
VL320-90A	90A	0,96	10	570	5,8	77	47
VU320-60A	60A	0,97	7	650	1,5	27	37
VU320-70A	70A	0,97	7,5	700	2,3	37	39
VU320-90A	90A	0,97	15	650	4,5	40	44



ENSOFT® Extrusion Series

TPE-S Styrenic SEBS Grades

ENSOFT® is our brand name for compounds based on saturated styrenic block copolymer SEBS (styrene-ethylene-butylene-styrene) and polyolefins mainly Polypropylene (PP).

The compounds have excellent rubberlike elasticity and weathering resistance. Ensoft-S® range can easily be self-colored with the use of proper Masterbatch or provided as pre-colored compounds. Typical properties of Ensoft-S® series are given below.

General Properties

- Hardness range from 5 Shore A to 50 D
- Service Temperature -50°C ± 100°C (dynamic) -50 ± 120°C (Static/Peak)
- Excellent ozone, UV and weather resistance due to saturated elastomeric phase
- Chemical resistance against many aggressive media
- Low compression set and good elasticity in a wide temperature range
- Ease of processing (no pre-drying is required) and recyclability.

General Grades Medium and High Filled

Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength	Compression set at	Compression set at
	Sh A	gr /cm3	Mpa	%	%100 Mpa	MPa	72h 23C	22h 70C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO37	ISO 34-1	ISO815 typeB	ISO815 typeB
SD141-50A	50	1,08	6,1	720	1,3	31	18	33
SD141-60A	60	1,08	8	650	1,7	30	18	41
SD141-70A	70	1,08	8,5	680	2,5	42	24	44
SD141-80A	80	1,08	11	650	3,2	44	28	55
SD161-40A	40	1,18	6,5	750	0,6	21	17	36
SD161-50A	50	1,18	7	710	1,2	29	20	39
SD161-60A	60	1,18	7,5	700	1,5	31	24	43
SD161-70A	70	1,18	8,2	650	2,4	40	27	49
SD161-80A	80	1,18	9,5	650	2,7	42	30	53

*Available colours: Black and natural, others available on request

General Grades Non Filled and Translucent

Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength	Compression set at	Compression set at
	Sh A	gr /cm3	Mpa	%	%100 Mpa	N/mm	72h 23C	22h 70C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO37	ISO 34-1	ISO815 typeB	ISO815 typeB
SD300-60A	60	0,89	8,5	700	1,7	35	29	37
SD300-70A	70	0,89	9,5	830	2,94	42,1	30	45
SD300-80A	80	0,89	15,5	700	3,8	62	43	50
SD320-60A	60	0,98	8,5	750	1,7	36	16	35
SD320-70A	70	0,98	9,2	720	2,7	42	18	42
SD320-80A	80	0,98	14,5	690	3,9	65	31	49

*Available colours: Black and natural, others available on request

Semi-Rigid and Rigid Grades

Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength	Compression set at	Compression set at
	Sh A	gr /cm3	Mpa	%	%100 Mpa	MPa	72h 23C	22h 70C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO37	ISO 34-1	ISO815 typeB	ISO815 typeB
SD141-90A	90A	1,08	12,3	620	5,2	67	35	64
SD141-40D	40D	1,08	15	600	8	70	42	70
SD161-90A	90A	1,18	12	540	3,9	45	38	58
SD161-40D	40D	1,18	14	610	7,8	50	46	69
SD300-90A	90A	0,89	17	700	3,8	73	31	50
SD320-40D	40D	0,98	19	600	7	75	50	55

EXTRUSION Series

QB36 Approved Grades

These grades were developed to meet the requirements of CSTB- QB36 Class 5 or 4 standard and are suitable for 'static' (Class 4) or 'dynamic' (Class 5) applications

Grades	QB36 Approval	Color	Hardness	Density	Tensile Strength	Elongation at Break	Compression set at
			Sh A	gr /cm3	Mpa	%	22h 70C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO 37	ISO 34-1	ISO815 typeB
VL321-65A-T4-000C	4,5	NATURAL	65	0,97	8	650	35
VL321-65A-T4-766C	4,5	GREY	65	0,97	8	650	35
VL321-65A-T4-900C	4,5	BLACK	65	0,97	8	650	35
SD141-60A-T2-000	5	NATURAL	60	1,08	7	750	35

RAL-GZ 716/1

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

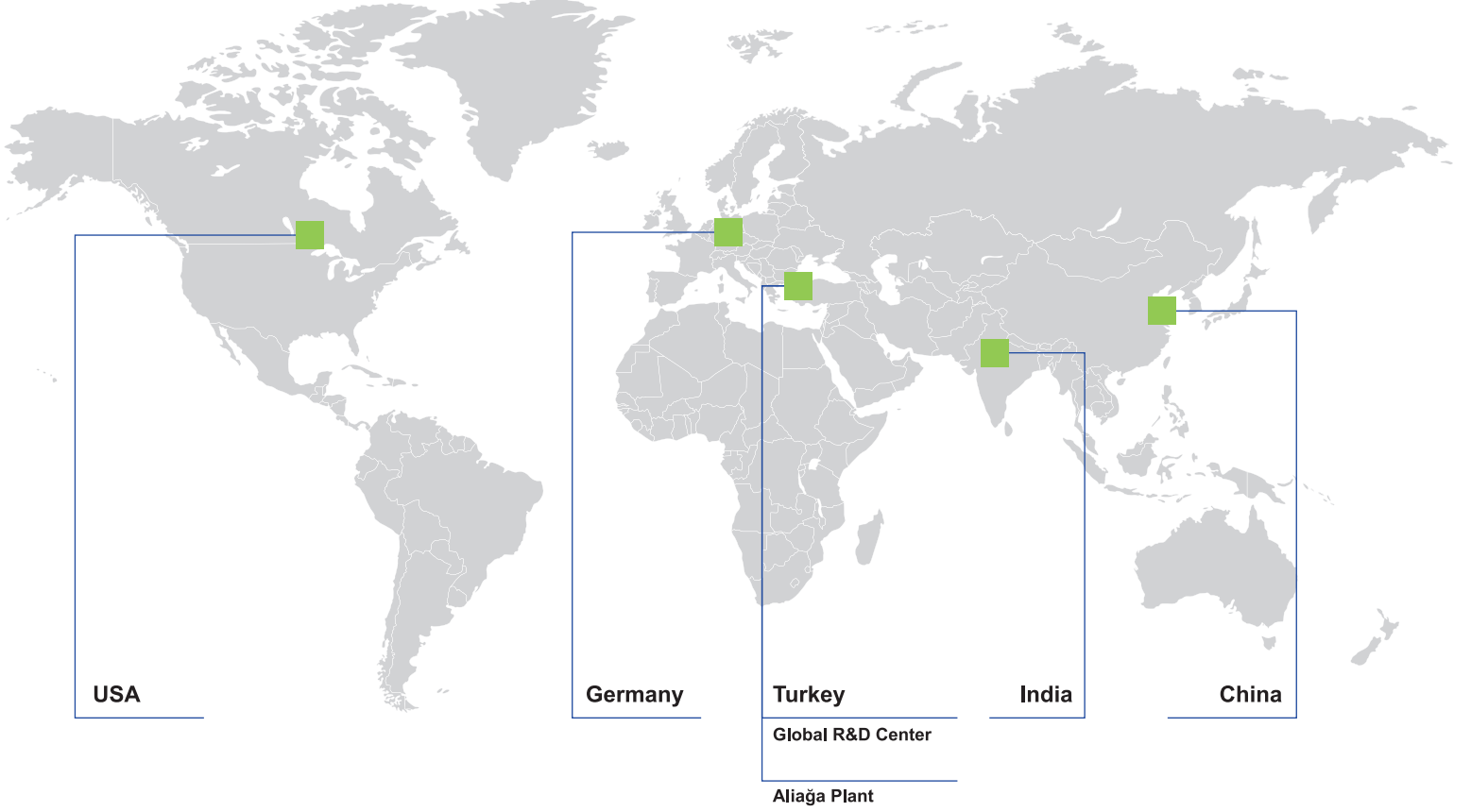
Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength	Compression set at
	Sh A	gr /cm3	Mpa	%	%100 Mpa	MPa	22h 23C
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO 37	ISO 34-1	ISO815 typeB
VU420-65A-T1-765	65A	0,97	6,9	550	2,2	39	37

Foamable Grades

Grades	Hardness	Density	Tensile Strength	Elongation at Break	Modulus	Tear Strength
	Sh A	gr /cm3	Mpa	%	%100 Mpa	MPa
	ISO 868 (15sec)	ISO 1183 1-A	ISO 37	ISO 37	ISO 37	ISO 34-1
SM806-30A-X2	30A*	0,89	6,5	850	0,5	20

* unfoamed hardness

Manufacturing plants



“Don't try to be the best,
try to work with the
best”

Raf Van Gorp
Founder



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