

**Offering EPDM Rubber Profile
for the Construction & Glass Industry**



Serving Domestic and Global Market



ZENITHTM **ZENITH** RUBBER INDUSTRIES
MIDDLE-EAST LLC.

Quality Rubber Solutions



ISO 9001:2015 REGISTERED FIRM
CERT. NO: ME/17/4251

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MICROWAVE EXTRUSION SYSTEM



TECHNICAL SUBMITTAL

EPDM RUBBER PROFILES

Project Name: _____

Consultant : _____

Contractor : _____

Sub-Contractor : _____

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Product Data:

- Technical Data Sheet
- Material Test Standard
- Country of Origin Certificate
- Warranty Certificate Sample Copy
- Third Party Evaluation Report

Company Profile:

Our Company Zenith Rubber Industries M.E.LLC was established in the year 2001 at Sharjah UAE in collaboration with Zenith Industrial Rubber Product of India. In order to Expand and streamline the manufacturing process, plant was moved to our own constructed 10,000 sqm building at RAK in year 2010. Along with our Indian company we are among the global leaders in producing and supplying various types of high performance technical rubber sheeting required in the area of mining, oil refineries, construction, water proofing and electrical insulation field. We produce sheets based on variety of Polymers suiting customer specification as well as end usage. It comprises from NBR/SBR, Neoprene, Nitrile, EPDM, Hypalon, Silicon and Fluro Elastomers. Apart from serving local and GCC markets, we are regularly exporting over 65% of our products to Europe, Australia, USA and Morocco etc.

We have installed capacity of approx 7000 MT/annum of producing rubber sheets and other rubber molded goods. Due to modern mixing equipment like twin screw sheeting and efficient cooling / batch of system, our company always has adequate compounding capacity to meet client exigencies. In order to enhance processing synergy and to utilize excess mixing capacity, in the middle of 2019 we have commissioned microwave based extrusion line for EPDM profiles. EPDM gasket / profiles find extensive usage in structural Aluminium and Glass industry. We can produce approximately 750 to 1000 MT/annum of Gasket/different types of EPDM Profile from our Microwave Extrusion line.

Our company's reputation for excellence has been built on our ability to provide our valued customers with the most effective manufacturing solutions to meet their most demanding applications. Our main objective is to continuously exceed our customer's expectations by providing them with high-performance gaskets and sealing products. Also, we offer competitive pricing on-time delivery and exceptional customer service. ZRI is committed to consistently meet all the technical specifications and tolerance required by the customer.

Our Vision:

We aim to ensure total customer satisfaction by continuously offering them products strictly in accordance to their prescribed specification and time frame. To attain this objective our company is regularly upgrading the processing facilities besides enhancing the skill of workmen and other auxiliary staff.

Quality Management System:

We are ISO 9001-2015 Company, most of our product adhere to international quality standards like RoHS, Reach Compliances, etc.

Our Quality Management is designed to ensure consistency in the quality and services of our products. Every manufacturing operation must adhere to specific quality standard based on customer requirement as well as our own internal standards. We have in house R & D set up and team of Professionals to design profiles suiting to end application by strictly following quality norms at each and every stage of manufacturing. We have in house Die fabrication facility with CNC wire cutting machine, turning, Milling and Drilling machine beside latest Auto CAD support system.

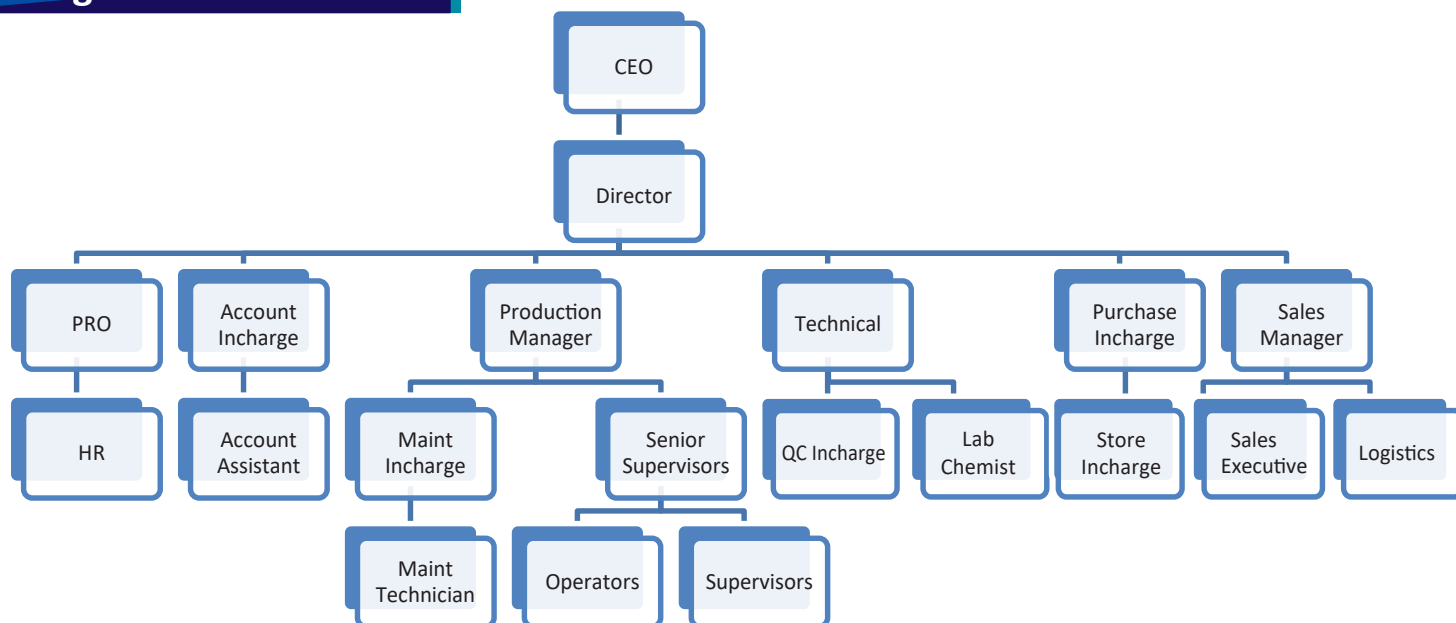
EPDM Rubber Extrusion Profiles:

We are offering quality EPDM Rubber Extrusion system for the Architectural Aluminium Industry for local, GCC and other regions. We are serving both system makers as well as Aluminium Fabricator, unlike trading companies or single product driven company we offer greater customer confidence by being in this market for last 19 years and having a well audited globally accepted plant that offers consistent quality product for various industries. Due to in house compounding mixing and better inventory of raw materials we can serve the industry more efficiently without compromising on the quality and the delivery schedule. We specialize in the manufacturing of precision die cut EPDM rubber gaskets and seal for Architectural aluminium and other industries.

EPDM is best polymer for profiles and other external application:

As per the Green book on rubber & illustration from Vanderbilt book etc. EPDM polymer are known to offer long lasting consistent mechanical properties. EPDM Polymer is most suitable for excellent resistance to heat, ozone, sunlight and aging. Its distinctive ability to stabilize color and resist harsh weather conditions makes it an ideal choice for outdoor applications. EPDM offers excellent resistance to water, steam, alkalis, acids and oxidants. It is also sulphur and peroxide curable. At the moment we are processing through sulphur vulcanisation system, but trial is on to develop products based on peroxides.

Organization Chart :



List of Equipment & Capacity :

- I) 1 Kneader 110 litre , 1 Kneader 100 litre
- II) Cooling batch off / Packer stacker system
- III) Twin screw sheeting system of 2000 kg/hour capacity
- IV) Cold feed Extruder for calendering
- V) Calendering machine of 1700mm width - 2 Nos
- VI) Two Roll Mixing mill in dimension of 60" to 72" - 4 Nos
- VII) Rotocure - 8 Nos
- VIII) Hydraulic Press - 3 Nos Sizes : 5.5mtrx1.5mtr /3.0mtrx1.4mtr /1.5mtrx1.2mtr
- IX) Buffing machine to sand or grind one or both side of Rubber sheets.
- X) Air Compressors- 2 Nos
- XI) Thermal fluid heating boilers- 2 nos
- XII) Full fledged mechanical work Shop
- XIII) High Voltage Electrical Insulation testing system
- XIV) Multiple weighing balances 100 gms to 3 MT

Our Processing Equipment



Kneader



Mixing mill



Mixing mills & Calendering Unit



Rotocure



Cooling batch off Unit



Calendering Unit



Laboratory Testing Equipment:

- Mooney Viscometer
- Moving Die Rheometer
- Compression Set Apparatus
- Specific Gravity Instrument
- Hardness Tester
- Tensile Tester
- Abrasion Tester
- Heating Oven for aging testing
- Lab mill / Lab press for preparing pilot trails
- High Voltage Electrical Insulation testing system
- Melting point testing apparatus
- Hydrometer for Oil & Solvent testing

Mooney Viscometer:

Mooney Viscometers are the leading testing instruments for measuring viscosity, scorch and stress relaxation on polymers and rubber compounds. They are generally design and manufactured in accordance with ASTM D 1646, ISO 289:2005 & DIN 53525 Standards.

In extruded products flow of compound is very critical for smooth exit from the die. The best processing is achieved by having a consistent compound with respect to its flow. Mooney viscometer offers us the viscosity index of raw as well as compounded rubber.

One can set a desired value and ensure that every batch has same index.



Moving Die Rheometer:

The MDR is the easiest to operate and most cost-effective way to determine vulcanisate properties of polymers and rubber compounds before, during and after cure. The acquired data gives exact information about processability, cure characteristics, cure speed and the behaviour of the compound after cure.

These rotorless curemeters are equipped with a bi-conical die system is based on manufacturing standard with respect to ASTM D 5289, ISO 6502, DIN 53529 Standards.



Compression Set Apparatus:

Compression test according to ASTM D 395, DIN 53517 Standards. It is used for determination of compression set under constant strain. The instrument consists of three stainless steel plates with parallel and flat ground faces. These frames are made of a rigid steel body.

A pair of rod is also provided with the instrument to locate the plates easily on the frame. The instrument has two sets of separators or spacers that helps in maintaining the compressing thickness. Springs are placed with these separators to lift the plates upside and to release the compression load. These springs are also used to enhance the gaps between the plates to easily insert the test specimens.



Specific Gravity Instrument:

Specific Gravity Balance provides a simple and quick way to read directly the specific gravity of rubber and other elastomers. Thus reducing labour and eliminating calculations. The time taken to find out specific gravity of a sample is only about half a minute. It is Widely used in the rubber industry.



Hardness Tester:

Test method of Hardness testing is as per ASTM D 2240, DIN 53519 Standards. The hardness of the rubber compound is determined as Shore A or Shore D. A Standard test button has to be checked for the calibration. Shore A scale is used for testing soft Elastomers (Rubbers) and other soft polymers. Shore hardness is tested with an instrument called Durometer. Durometer uses an indenter loaded calibrated spring. The measured hardness is determined by the penetration depth of the indenter under the load.



Tensile Tester:

Testing methods is according to ASTM D 412, DIN 53504 standards. Elongation is defined as the percentage increase or strain, in the original length of a rubber sample with the application of a tensile force or stress. Certain elastomers tend to stretch more compared to others.

Tensile modulus is the stress or force required for producing a strain or an elongation percentage in a rubber sample. Although it sounds similar to tensile strength, the properties are different. Harder rubber usually has a higher tensile modulus, making it mechanically more enduring.

Tear resistance is the resistance of an elastomer to the development of a cut or nick when tension is applied. This property, also called tear strength, is measured in kilonewtons per meter (kN/m)



Abrasion Tester

The test procedure according to standard DIN 53516 provides a measuring method for assessing the resistance of elastomers to wear by rubbing. The determination of the volume loss by rubbing with test emery of defined abrasive power by this method is suitable for comparative testing. It helps in determining the reinforcement and dispersion quality in a rubber compound / rubber article.



Melting-point apparatus:

Scientifically every element has predetermined melting point which is inherent to its chemical structure. The variation in melting point temperature indicates impurities associated with the test specimen. It is important instrument for assessing consistency of raw material quality.



Hydrometer:

Hydrometer is an instrument used to measure the relative density of liquids. This instrument is used to check the density of liquid like processing oil and other liquid additives. This is part of raw material testing.



Muffle Furnance:

It is used for determining ash content. Which is reflective of various types of filler in the test specimen.



Heating Oven:

This is to test the specimen at accelerated aging condition.



Million Megohm meter:

Million Megohm meter is a user friendly, cost effective solution for measuring insulation properties like Insulation resistance, Dielectric absorption, Polarisation index, volume & Surface resistivity of dielectric material & insulation.



Electrical Insulation Test:

The tests is carried out on Rubber sheet for determining its capability of offering resistance to higher voltages. There are two electrodes, the rubber sample is kept between them & a very high voltage applied through a step up transformer. The test is carried on predesired load from 11kV to 50kV or in some cases till the breakdown load etc.



CNC – Wire cut machine:

We have state of art CNC Wire cut machine which is directly coupled with Auto CAD unit, it is a precision quality equipment capable of cutting dies within the defined measurement and dimensional controls. This in house ability genuinely offers us greater control on the tolerances and timely execution of the order.



Auto Cad machine:

We have in house capability to produce accurate dies with the help of state of art Auto CAD machine that has in built provision to visualise the article in 2 D view for better understanding on the fitment related issues. The machine can store all the data and the same can be recalled in future for ready reference. It helps in cutting down the time that one expects to loose on developing a new die from the scratch.



Milling Machine:

We have British make Bridgeport Milling machine, this machine is also integral part for die making, once the die is produced from CNC Wire cutting machine, it has to go through Milling process to make provision for the smooth compound flow / extrusion from the die. Milling helps in creating appropriate shape and contours at the back of Die, which eventually creates the extruded profile as per the drawing etc.

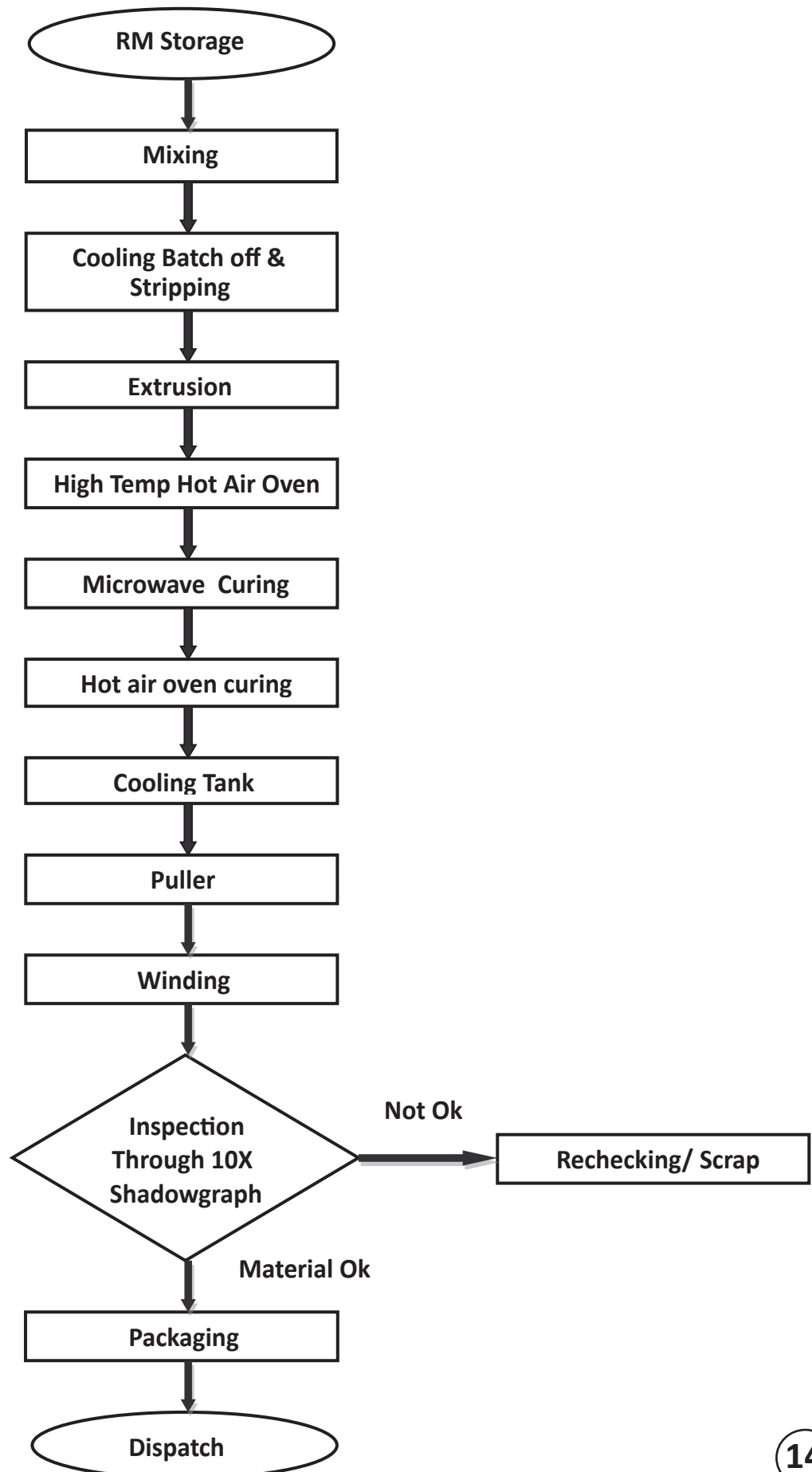


Profile projector:

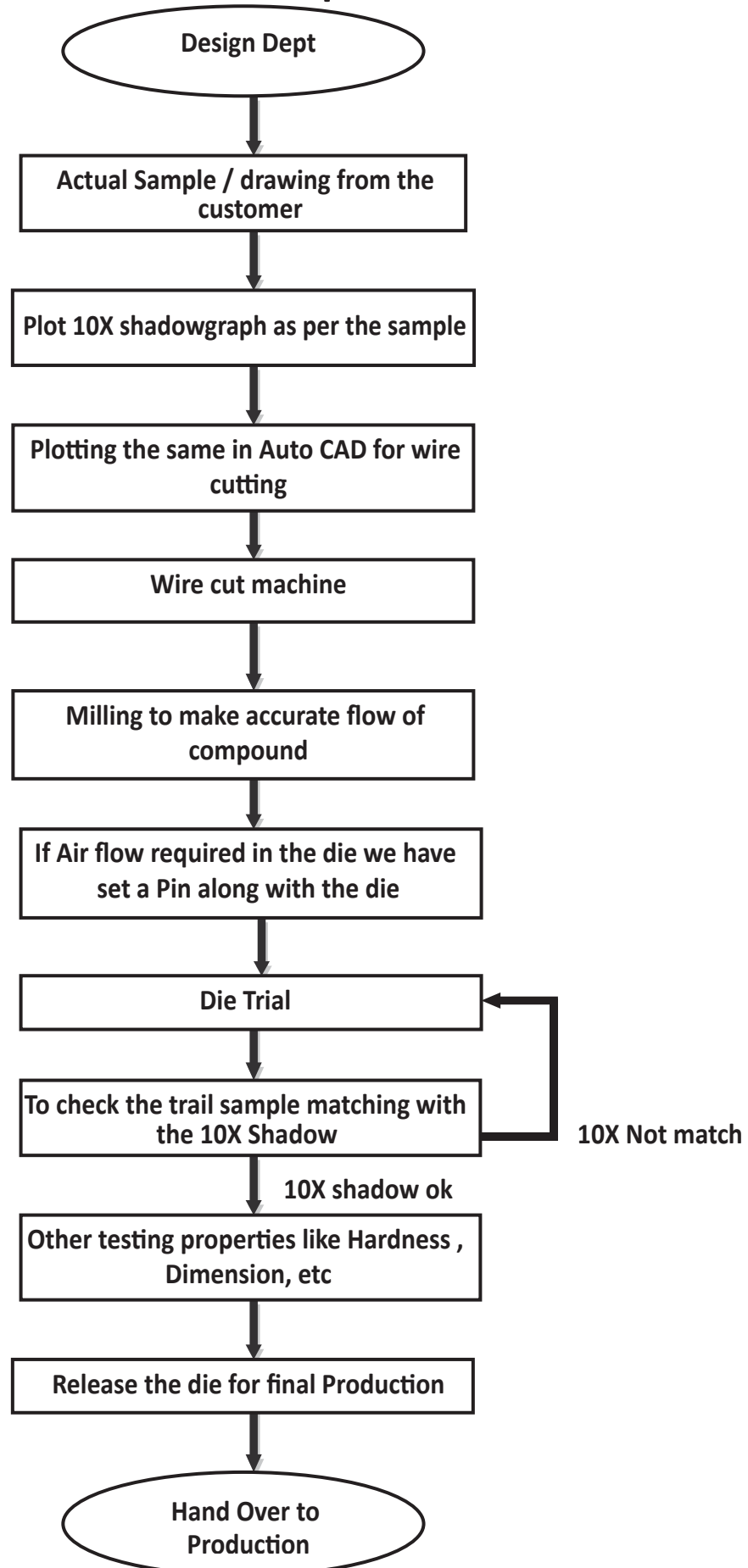
Our profile projector is among the best in industry, it is 10X unit that enhances the image of cross section of profile by ten fold for easier measurement of dimensions. This unit is extremely important in maintaining quality as in a production run we can keep checking samples in quick intervals to see if the cross section is within the desired shadow that has been created for QC reference.

This unit also helps in reverse engineering, from the cross section of client sample we can try and find actual dimension of major pointers. This unit is integral part to EPDM profile business.

Process Flow Chart - EPDM Rubber Extrusion



Process Flow chart - New Development for Rubber Profile



Range of Our Extruded Products:

Our range includes solid as well as dense profiles in EPDM, SBR, Neoprene, Nitrile and Silicone Rubber in Hardness range from Shore A 50 to Shore A 80 with tolerance of ± 5 in black, grey or other Colors. We also produce the Fire rated gasket in Neoprene /EPDM besides light fenders and expansion joints.

Application area for the Extruded EPDM Rubber Profiles:

Our EPDM Sealing gaskets and profiles are well received in Architectural Aluminium Industry as well as general purpose industrial application.

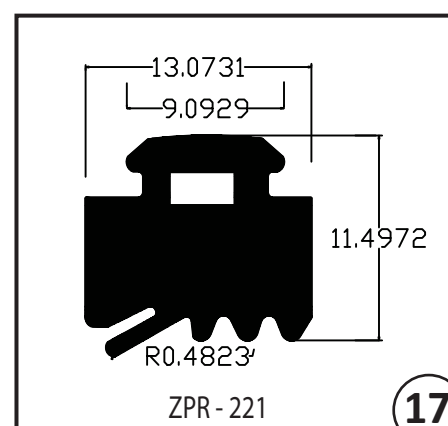
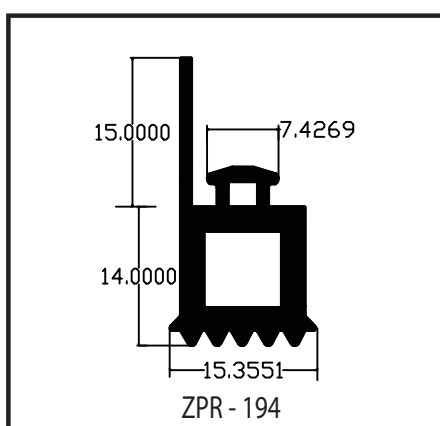
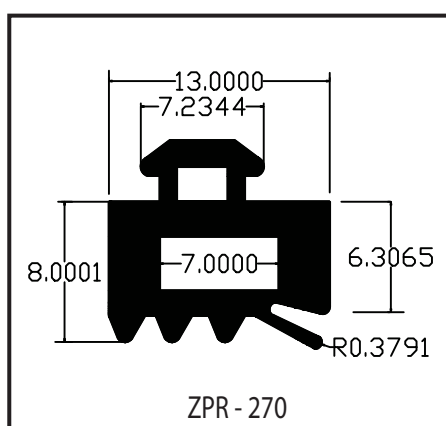
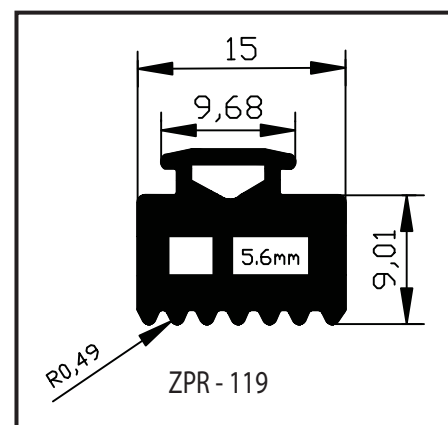
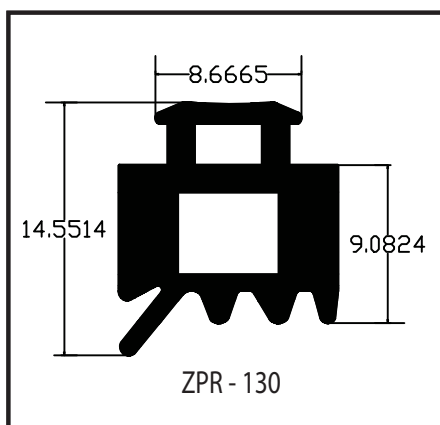
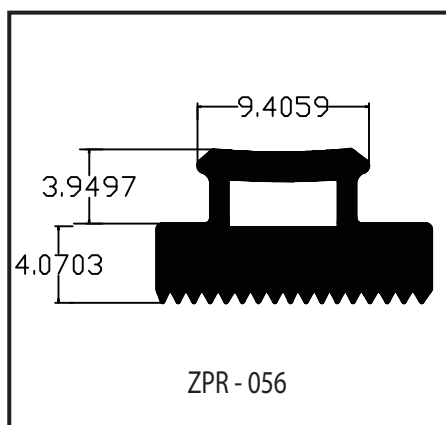
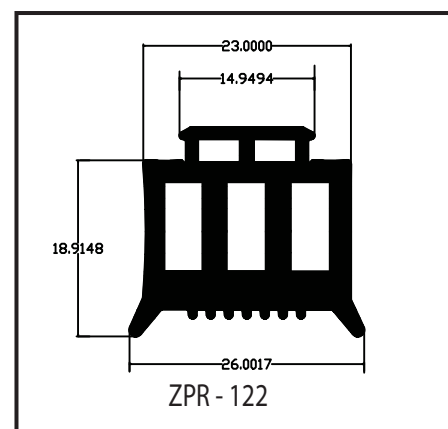
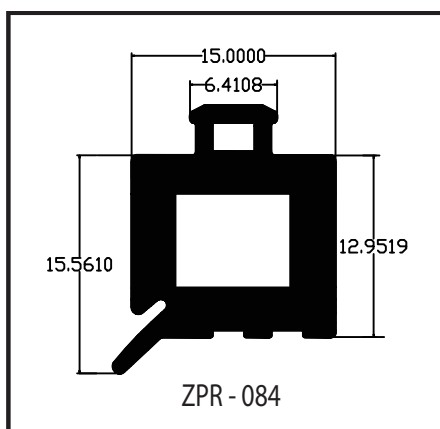
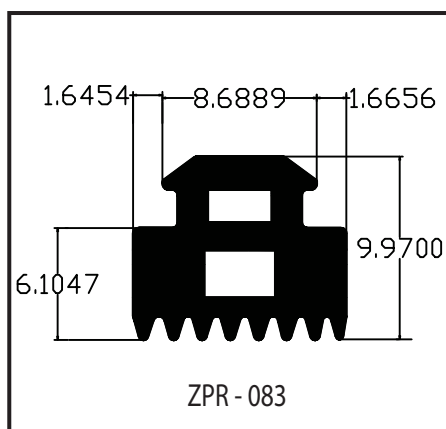
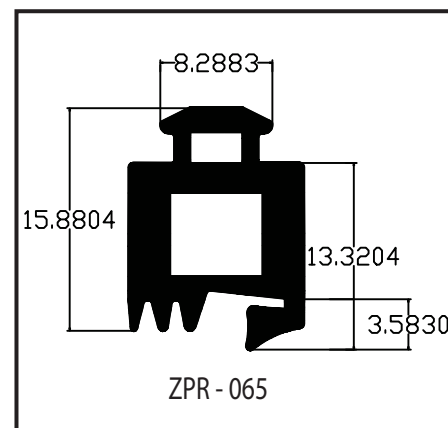
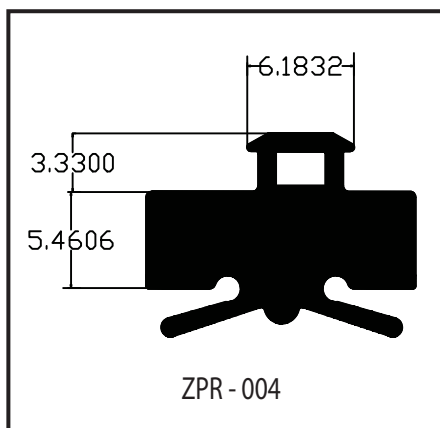
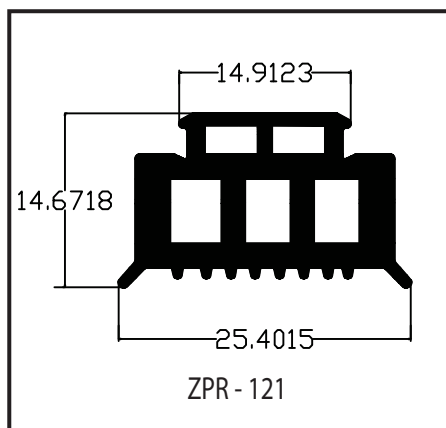
Architectural:

- Sliding/ Hinged window and doors
- Structural Glazing
- Curtain Wall
- Thermal Break doors
- EPDM Setting Block
- Edge Protection U Profile
- Composite Panel
- Expansion Joints
- Pipe Clamping Gaskets
- Facades

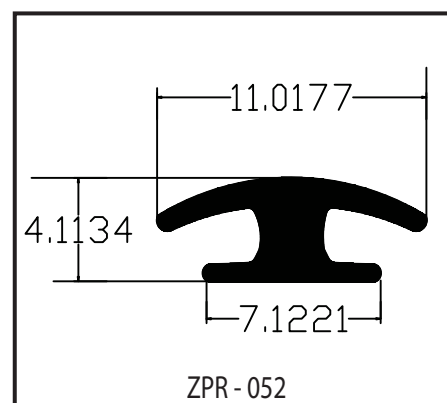
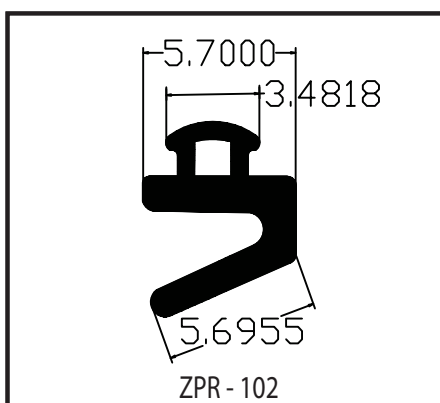
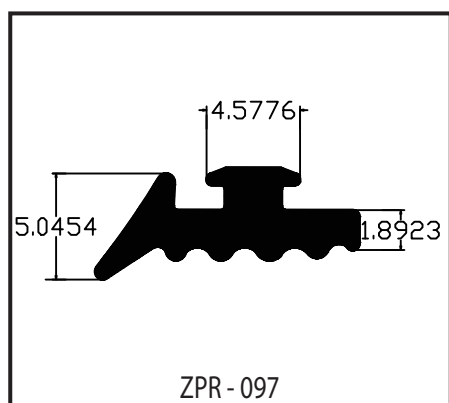
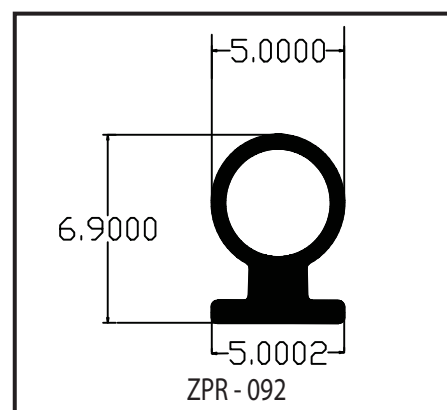
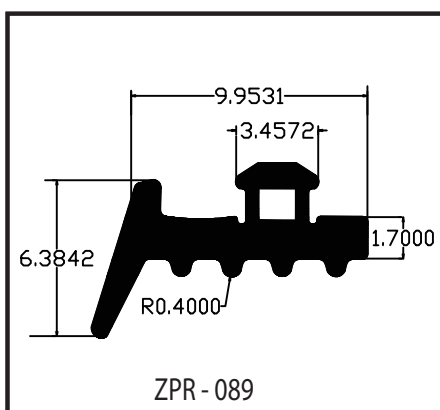
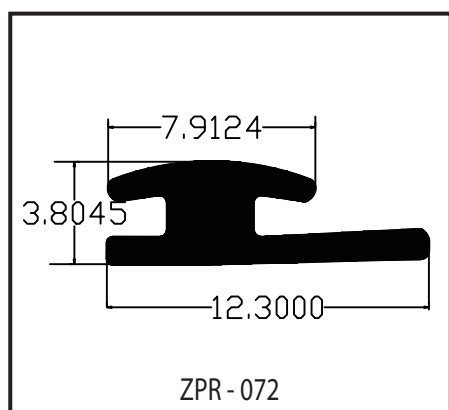
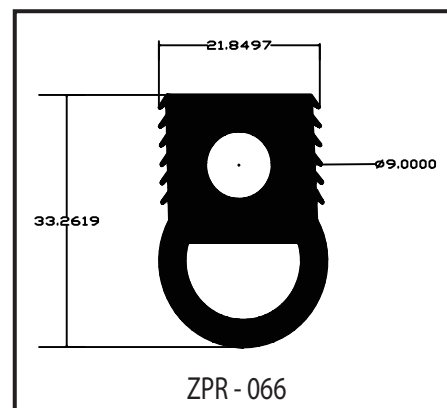
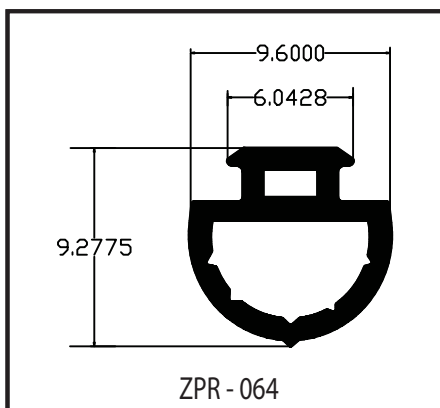
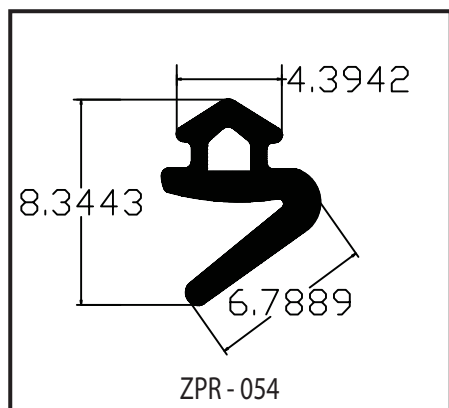
General:

- Marine D-fenders
- Soft packing gaskets
- Cords and pipe packing seals
- Door and Glass beading profile

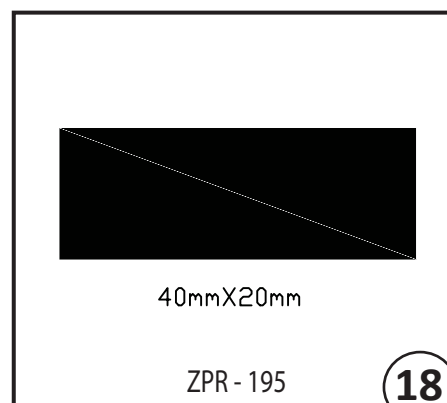
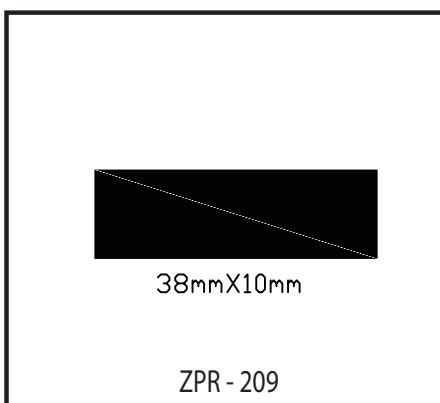
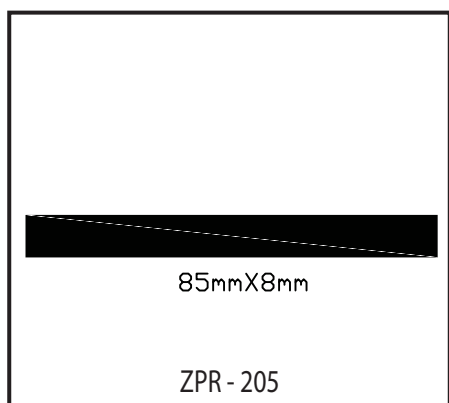
CURTAIN WALL GASKET



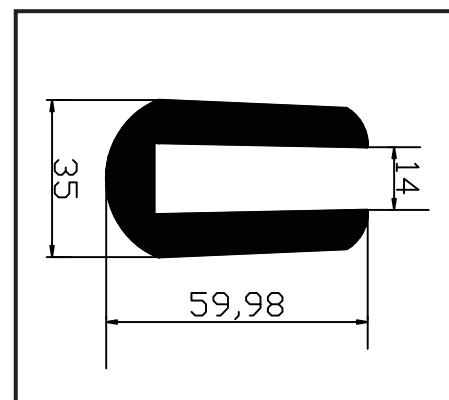
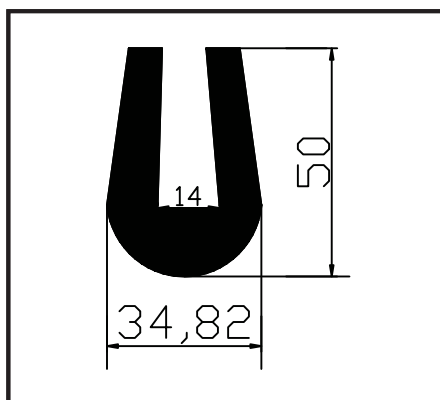
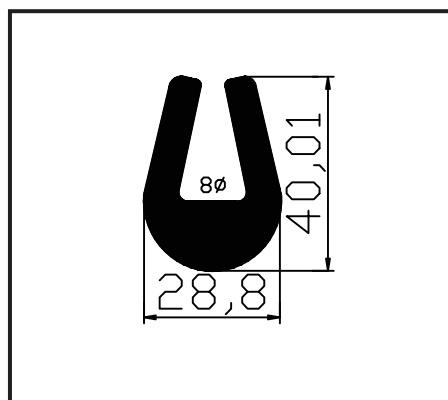
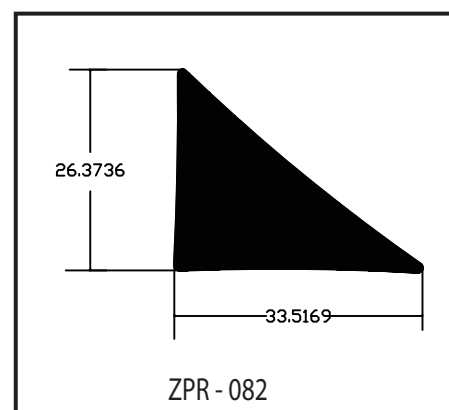
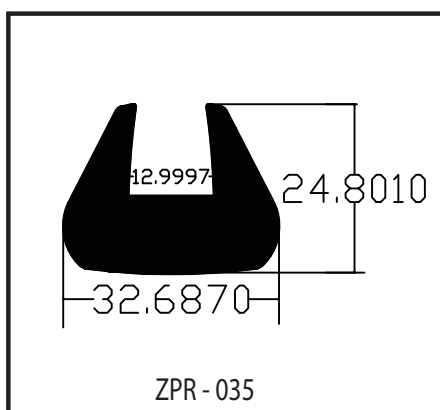
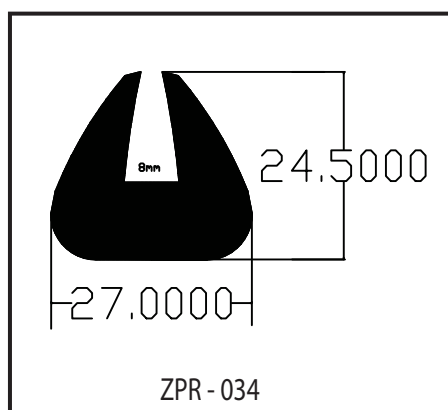
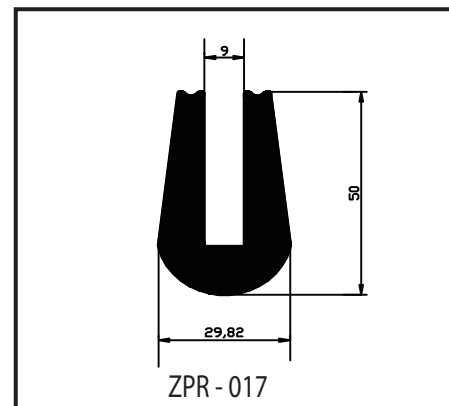
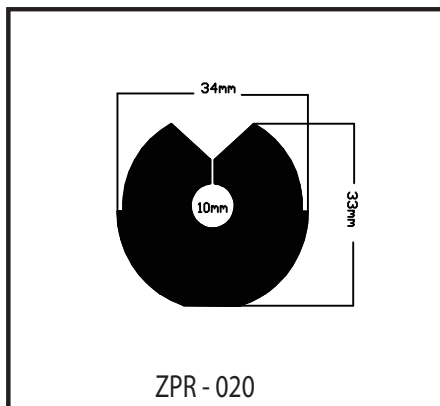
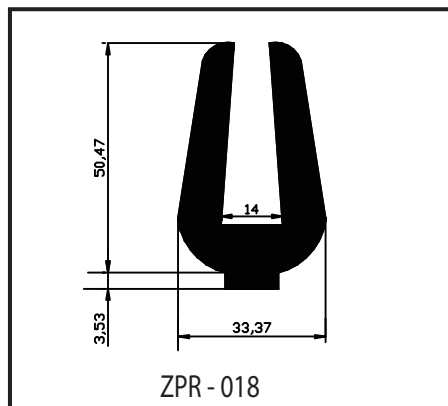
INNER & OUTER DOOR GASKET



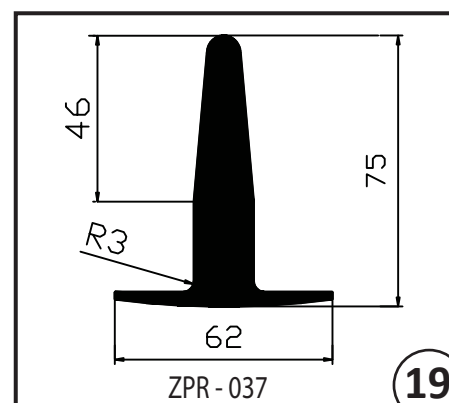
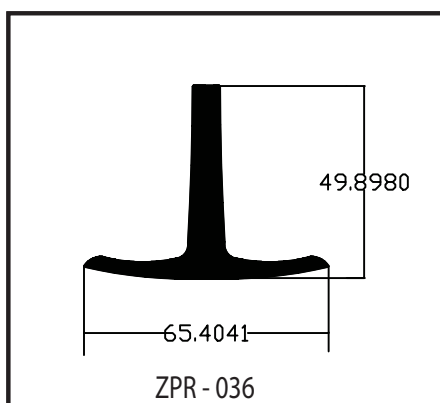
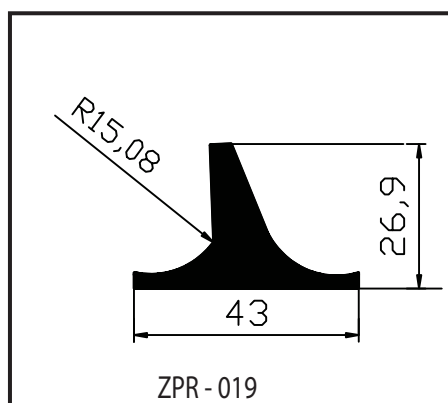
SETTING BLOCK



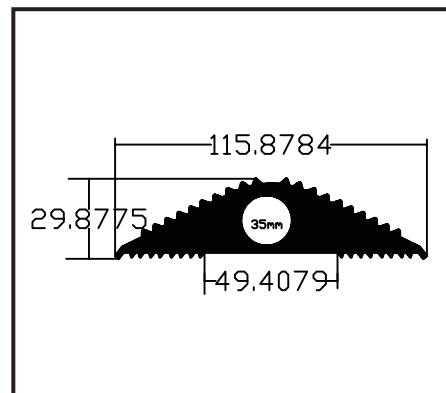
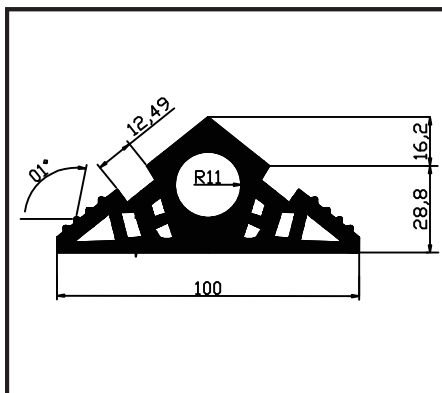
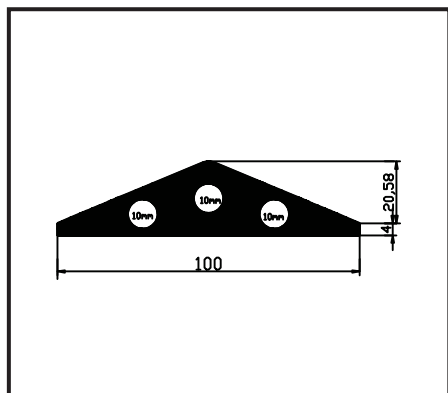
GRIP STRIPS AND CAPPING



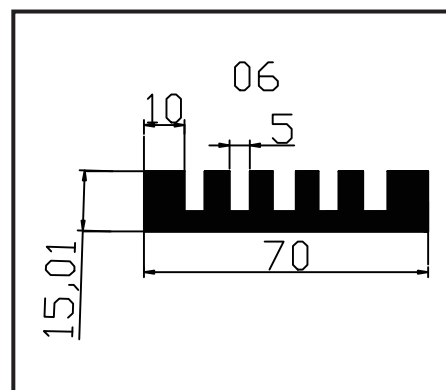
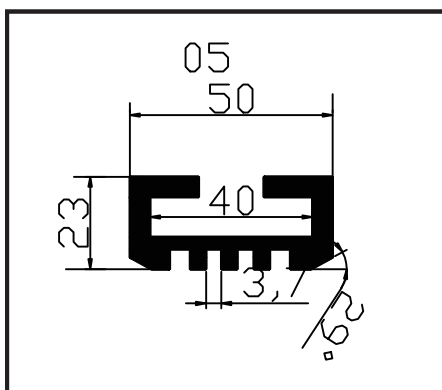
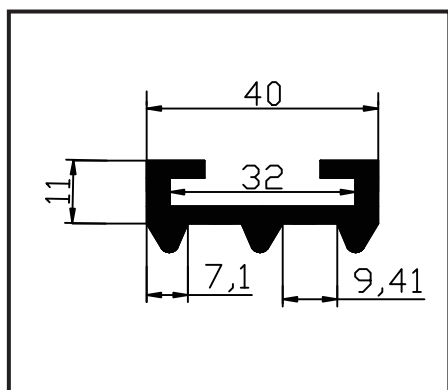
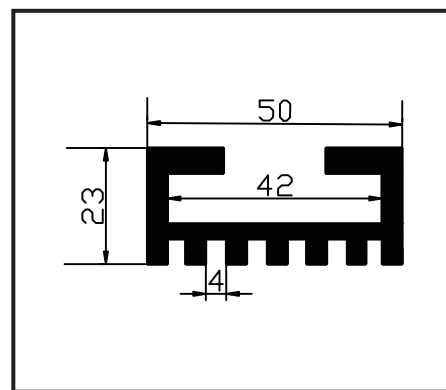
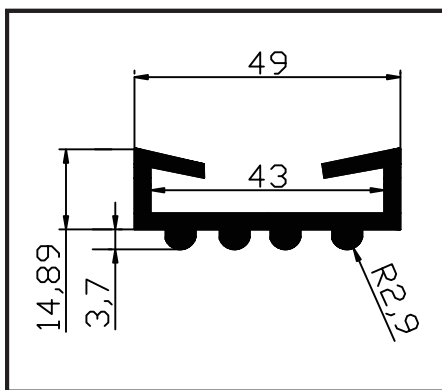
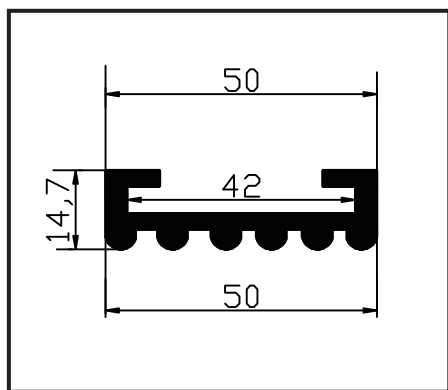
'T' CLEAT PROFILE



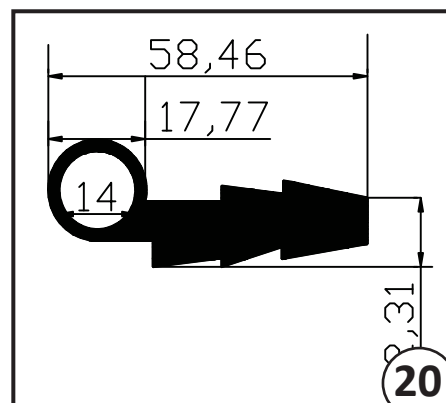
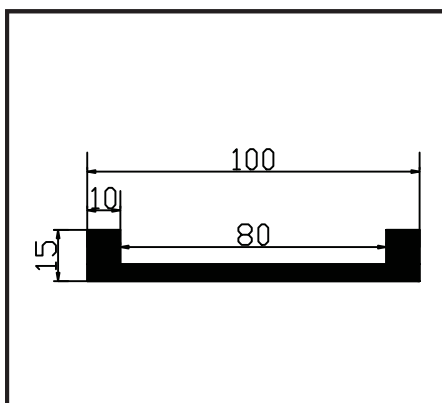
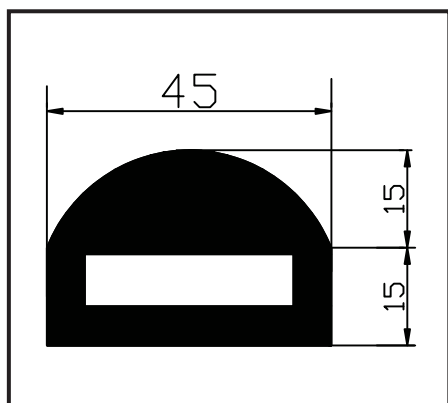
CABLE PROTECTION PROFILES



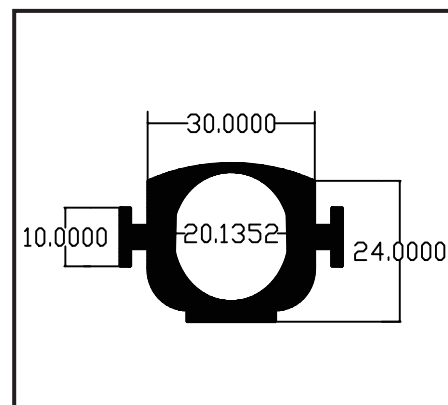
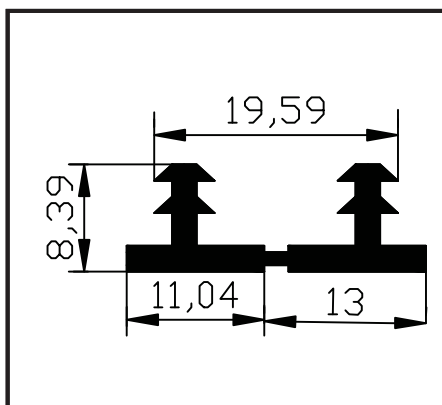
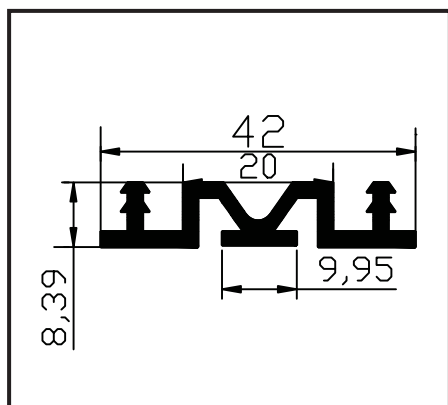
CLAMP PROFILE



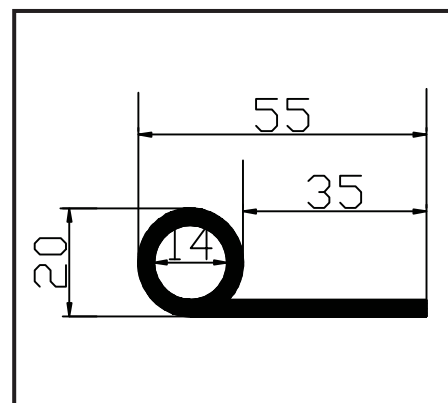
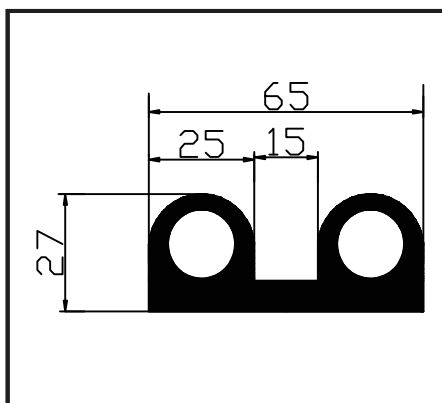
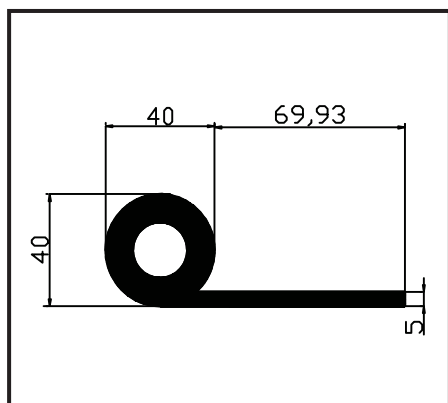
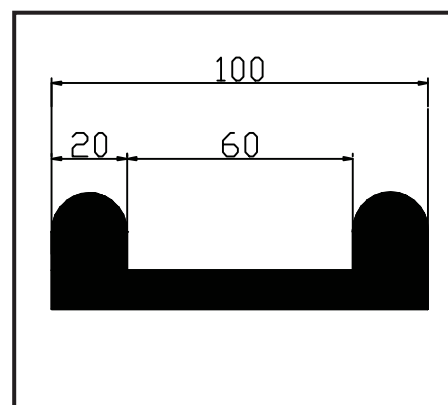
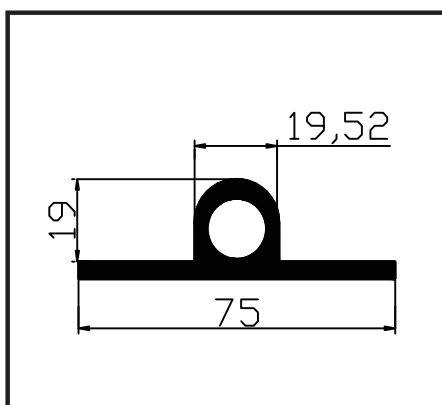
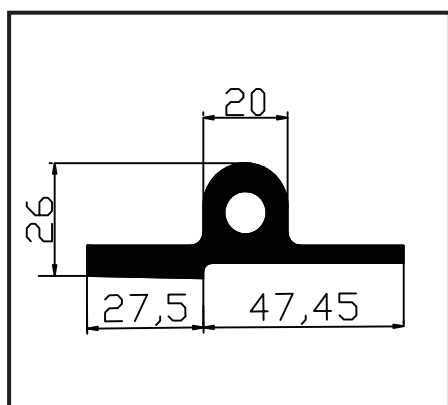
OTHER PROFILE



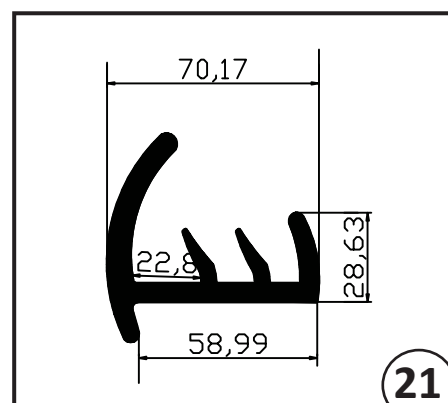
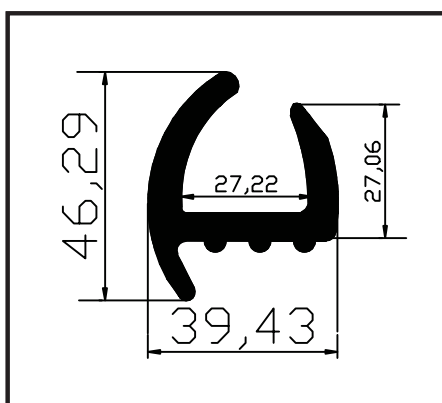
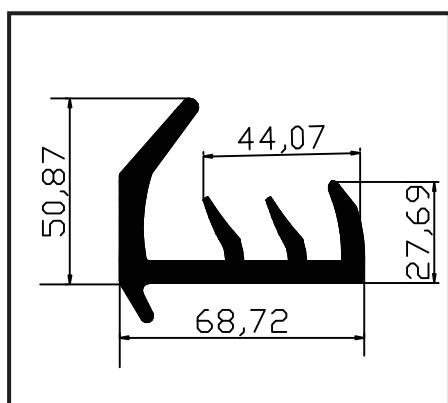
DILATATION SEAL PROFILE



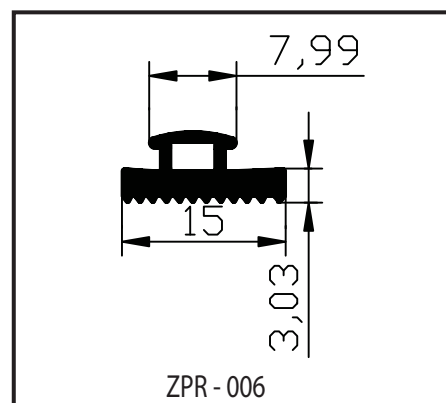
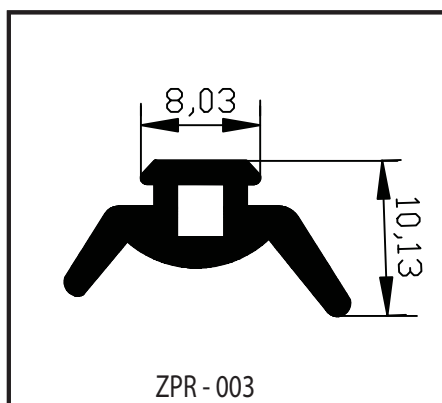
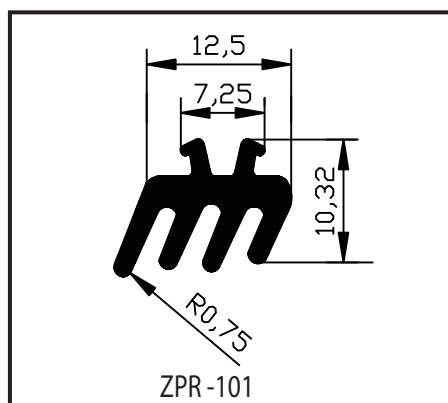
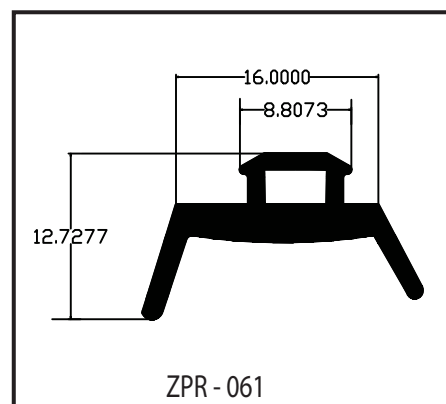
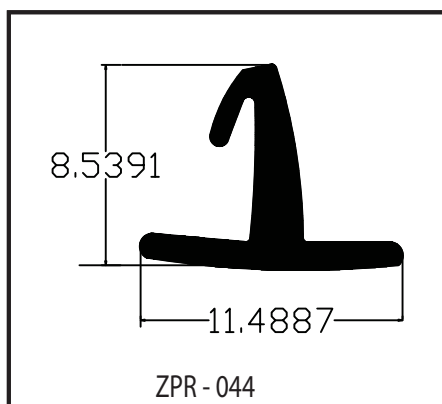
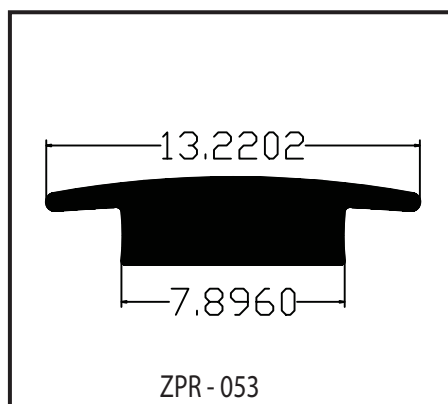
P PROFILE



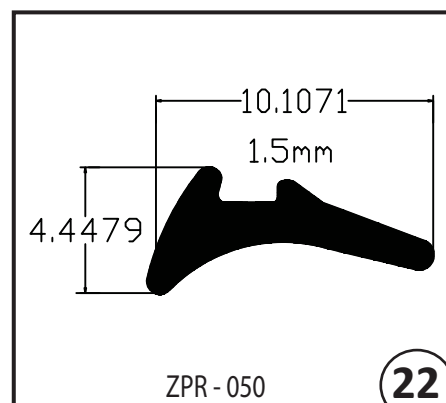
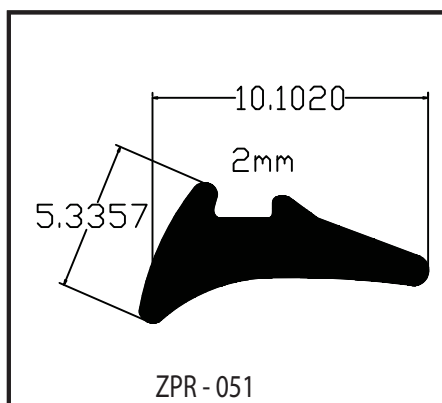
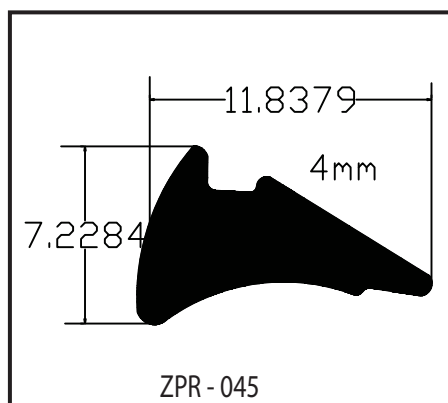
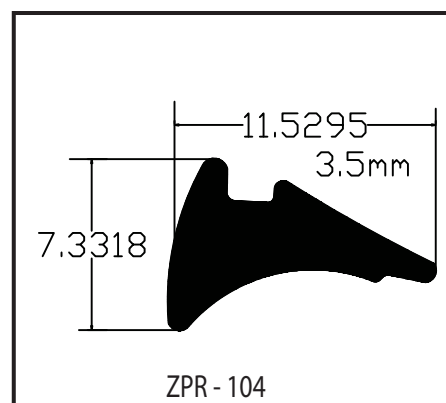
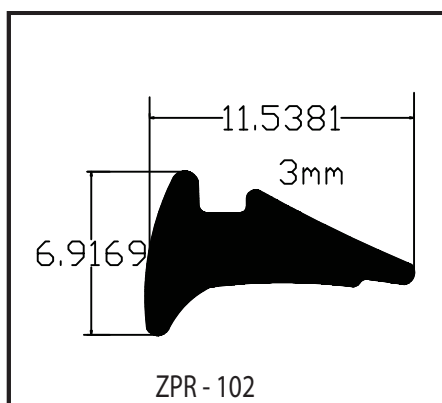
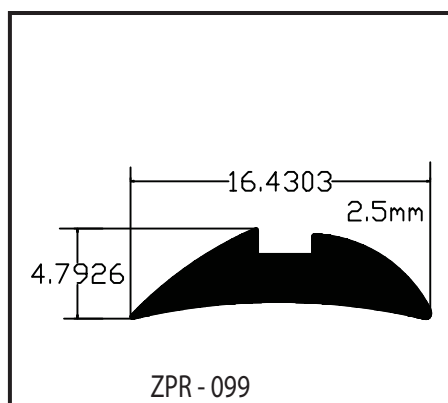
CONTAINER DOOR SEAL



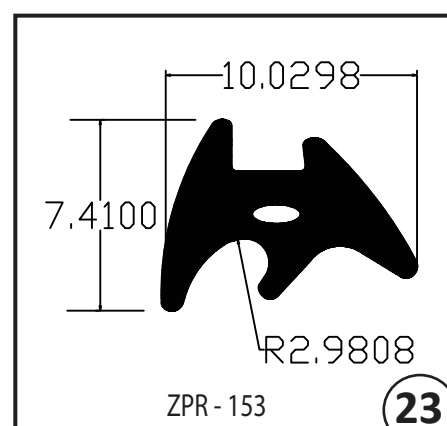
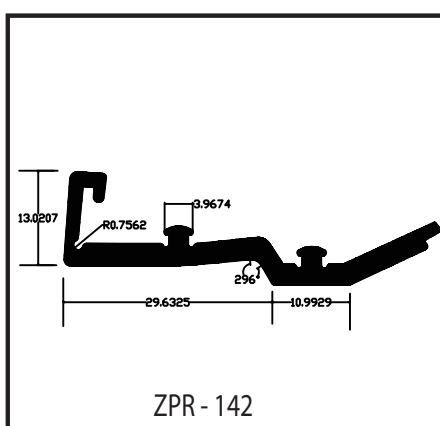
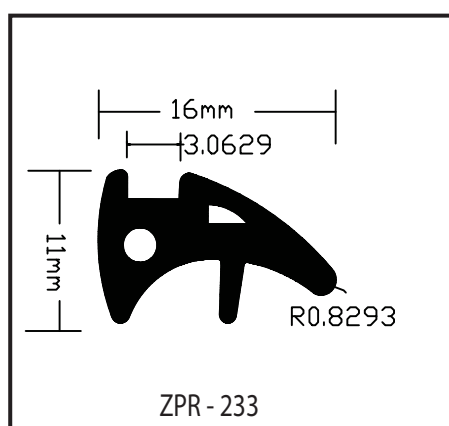
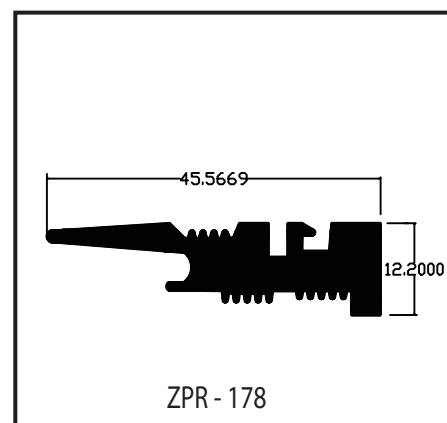
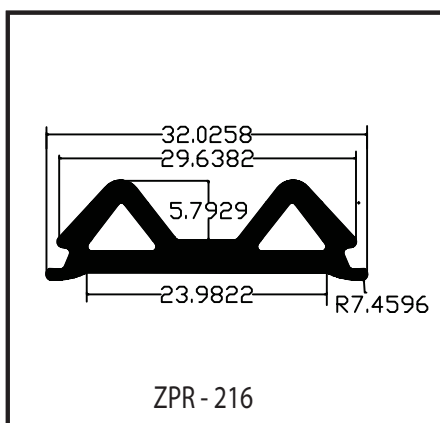
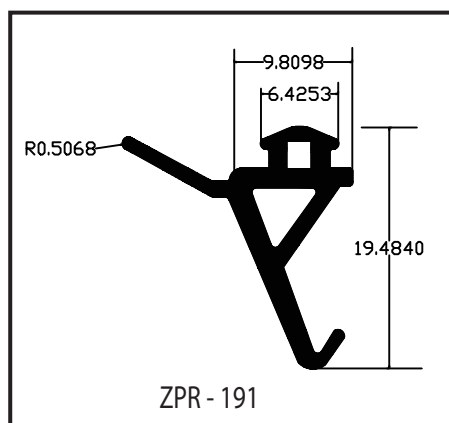
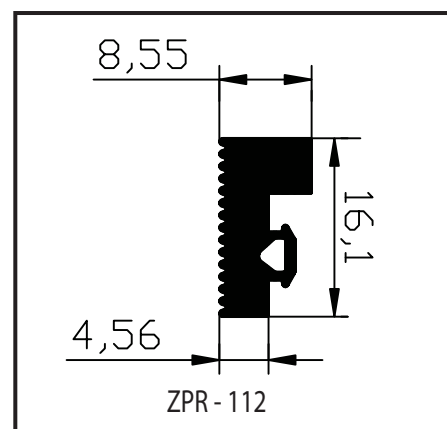
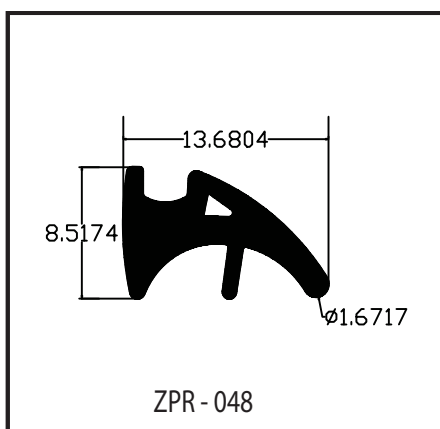
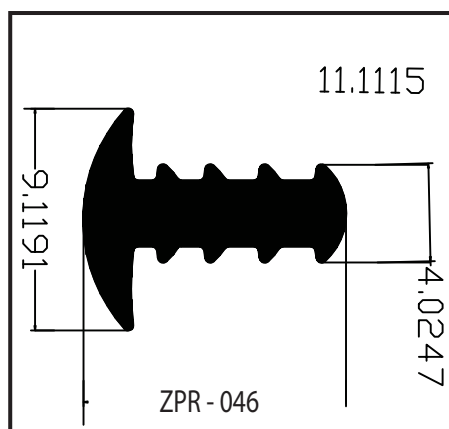
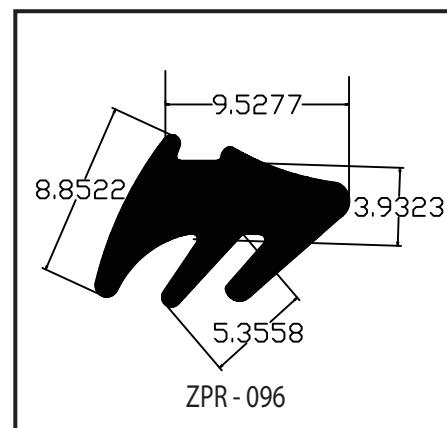
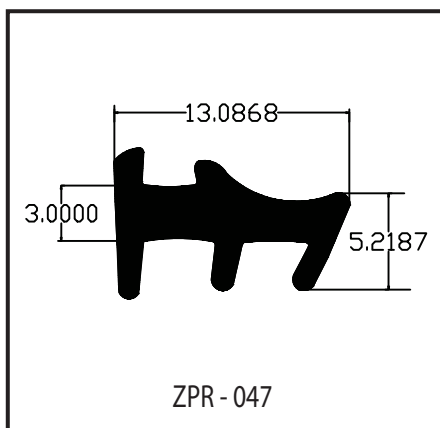
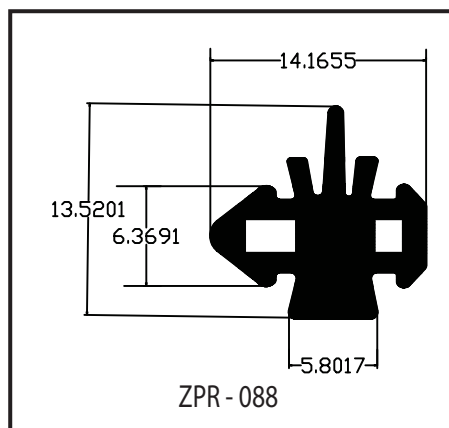
FIXED RUBBER & PRESSURE PLATE



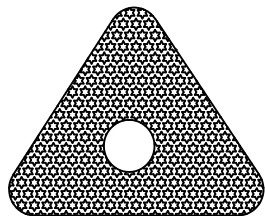
FILLER PROFILE



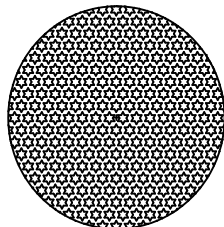
INTER LOCKING AND GLAZING PROFILE



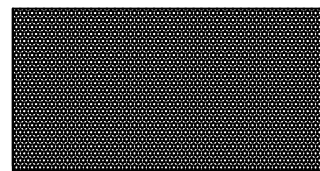
EPDM SPONGE PROFILE



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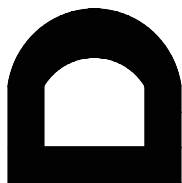


Ø8.00mm

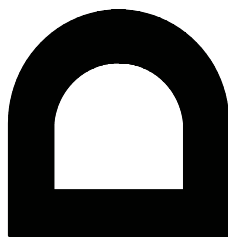


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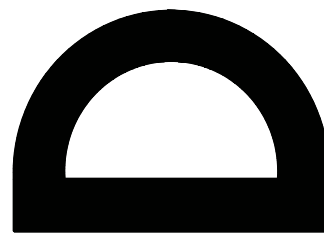
D FENDER



25MMX25MM



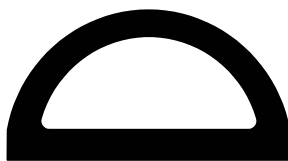
50MMX50MMX10MM
ZPR - 016



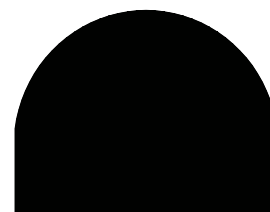
75MMX50MMX12MM



16x5mm

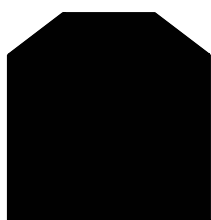


10mmx7mm

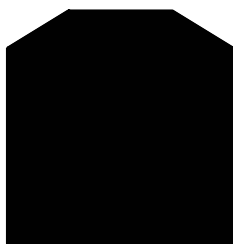


16mm x 12 mm
ZPR - 103

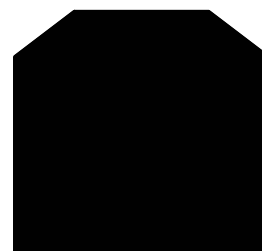
SHIP PACK



40MMX40MM



44MMX44MM
ZPR - 217



48MMX45MM
ZPR - 071

EPDM Rubber Profile For Aluminium Architectural Application

Material: EPDM Synthetic Rubber

Functions: EPDM Profile are extremely durable for sealing Glass & Aluminium structure for Water & Wind, Thermal Insulation for Facade Industry (Curtain Walls, Window Seals, Sky Lights, Domes) Excellent resistance to Weather Ageing , Ozone and UV Exposure.

We are offering the EPDM Rubber Profiles (various designs) to suit all major Aluminium Systems and Glass industries for the GCC as well as global market. With in-house R & D set up, we have team of Professionals to design profile as per the established quality norms at each and every stage of manufacturing. Our in house Die fabrication facility with CNC wire cutting machine besides latest Auto CAD Support and Milling / Drilling equipment etc. helps in producing world class product.

TECHNICAL DATA SHEET

General Physical Properties as per DIN 7863

Properties	Specifications	Test Method
Hardness (Shore A)	70 $\pm$ 5	DIN 53519
Tensile Strength (Mpa)	7.5 Min	DIN 53504
Elongation @ Break (%)	200 Min	DIN 53504
Change in Properties after Ageing @ 70° C X 70 Hrs.		
Hardness Change	-5 to +10	DIN 53519
Tensile Change (%)	-20 Max	DIN 53504
Elongation Change (%)	-40 Max	DIN 53504
Compression Set - 22 Hours at 70° C	30 % Max	DIN 53517
Ozone Resistance 20% Stretch 40° C 100 PPM 48 Hrs	No Cracks	DIN 53509

We have developed the EPDM profile compound meeting standard EN 13501 class 'B' and the same is in trials and will be introduced in the market shortly.

EPDM Rubber Profile For Aluminium Architectural Application

TECHNICAL DATA SHEET

General Physical Properties as per ASTM C-864

Properties	Specifications	Test Method
Hardness (Shore A)	70 $\pm$ 5	ASTM D 2240
Tensile Strength (Mpa)	12.4 Min	ASTM D 412
Elongation @ Break (%)	200 Min	ASTM D 412
Change in Properties after Ageing @ 70° C X 70 Hrs.		
Hardness Change	0 to +10	ASTM D 2240
Tensile Change (%)	20 Max	ASTM D 412
Elongation Change (%)	40 Max	ASTM D 412
Compression Set - 22 Hours at 70° C	30 % Max	ASTM D 395
Tear Strength (kN/m)	17.5 Min	ASTM D 624
Ozone Resistance 20% Stretch 40° C 100 PPM 48 Hrs	No Cracks	ASTM D 1149



We have developed the EPDM profile compound meeting standard EN 13501 class 'B' and the same is in trials and will be introduced in the market shortly.

SILICON Rubber Profile For Architectural Aluminium Application

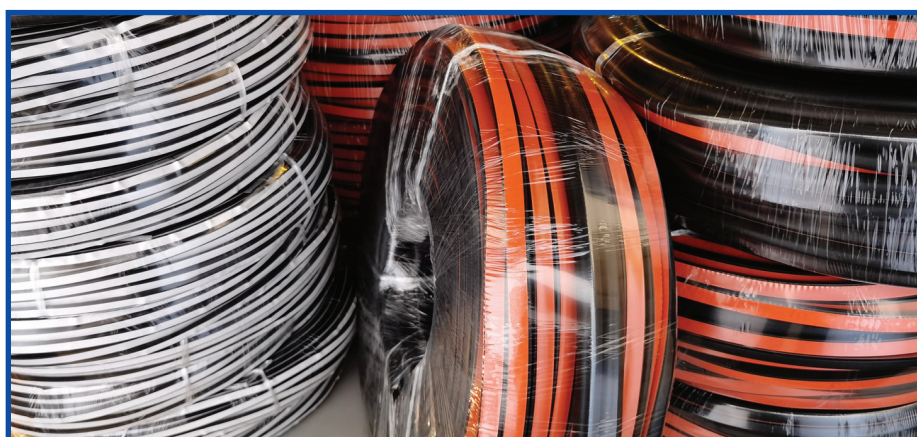
Material: Elastomer Silicone Synthetic Rubber

Functions : Silicone Profile is extremely durable for sealing Glass & Aluminium Sash, Water & Wind, and Thermal Insulation. Silicone Rubber Vulcanizates offers extremely good working properties at both very high and low temperatures

TECHNICAL DATA SHEET

General Physical Properties as per ASTM C-1115 (Table 2, Type C)

Properties	Specifications	Test Method
Hardness (Shore A)	70 $\pm$ 5	ASTM D 2240
Tensile Strength (Mpa)	5.0 Min	ASTM D 412
Elongation @ Break (%)	125 Min	ASTM D 412
Change in Properties after Ageing 0 Hrs @ 100° C X 70 Hrs.		
Hardness Change	0 to +10	ASTM D 2240
Tensile Change (%)	15 Max	ASTM D 412
Elongation Change (%)	40 Max	ASTM D 412
Compression Set - 22 Hours at 100° C	15 % Max	ASTM D 395
Tear Strength (kN/m)	17.5 Min	ASTM D 624
Ozone Resistance 20% Stretch 40° C 100 PPM 48 Hrs	No Cracks	ASTM D 1149



MATERIAL TEST CERTIFICATE

Cert Ref No :
Product :
Customer Name :
Invoice No / Date :
Date :
Standard :
Product Code :
Quantity :

Technical Properties for DIN 7863

PROPERTIES	SPECIFICATIONS	OBSERVED VALUE
Hardness (Shore A)	70 ± 5	72
Tensile Strength (Mpa)	7.5 Min	8.5
Elongation @ Break (%)	200 Min	275
Change in Properties after Ageing @ 70° C X 70 Hrs.		
Hardness Change	-5 to +10	5
Tensile Change (%)	-20 Max	-15
Elongation Change (%)	-40 Max	-28
Compression Set 22 Hours at 70° C	30 % Max	25
Ozone Resistance 20% Stretch 40° C 100 PPM @ 48 Hrs	No Cracks	Passed

Checked by,

Technical Department

TO WHOMSOEVER IT MAY CONCERN

Subject: Country of origin

This is to certify that EPDM Rubber Gaskets & EPDM Sheets, supplied by M/s. Zenith Rubber Industries Middle East LLC is manufactured at our factory in Ras-Al-Khaimah, United Arab Emirates.

For Zenith Rubber Industries Middle East LLC,

With Regards,

TO WHOMSOEVER IT MAY CONCERN

Cert Ref No :
Date :
Project Name :
Location :
Consultant :
Contractor :
Sub-Contractor :

This is to certify that EPDM Rubber Gaskets supplied to M/s. _____

Complies with respective relevant standards as mention below:

Invoice No	Product Code	Quantity	Standard
_____	_____	_____	_____

Under normal working condition (As specified in the test standard) our products have working warranty of 10 years subject to they have been installed with adequate care and avoided mixing with non compatible materials during installation. This warranty does not include normal wear and product abuse.

The warranty is restricted only to the value of defective profile or rubber products supplied from us. We would not be liable for the cost involved in replacement / repair work or any other damages.

For Zenith Rubber Industries Middle East LLC,

With Regards,



REPORT ON TENSILE STRENGTH & ELONGATION OF EPDM RUBBER

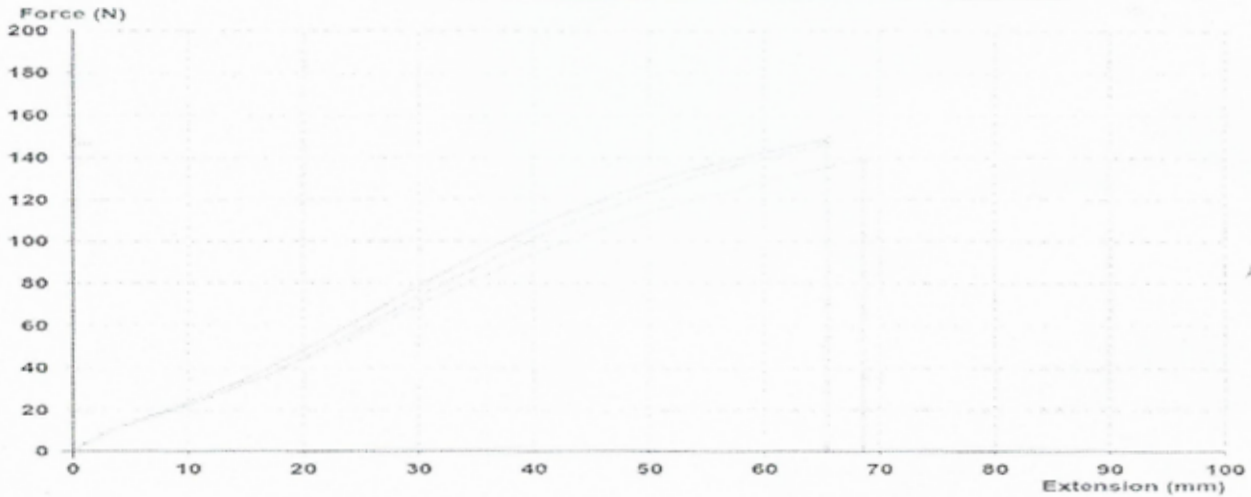
Client : Zenith Rubber Industries Middle East LLC
Address : P.O. Box 35542, Ras Al Khaimah, UAE
Contractor : NP
Consultant : NP
Project : NP
Sample Description : EPDM Rubber
Sample Name : EPDM Rubber Compound for Profiles / Sheetings
Source of sample : Client
Sampled by : Client
Sample code : CVEP 70
Type of Grip : Wedge Grips
Size of specimen : Dumbell Shape (Die C)

Report No. : PLCR-1912/5880
Lab Project No. : P-3350
Lab Ref. No. : PLCQ-1912/3136
Sender's Ref. No. : NP
Date Sample Received : 18/12/2019
Date test started : 25/12/2019
Date test completed : 25/12/2019
Report Date : 26/12/2019
Speed of Machine : 500 mm/min
Gauge Length : 25.0 mm
Testing Temperature : 23°C
Relative Humidity : 50%
Tested by : JR

Test Data:-

Tensile Strength & Elongation:-

Lab Ref. No.	Length of Specimen (mm)	Average Thickness (mm)	Width of Specimen (mm)	Maximum Load (N)	Tensile Strength (N/mm ²)	Elongation at Break (%)
PLCQ-1912/3136/1	115	2.02	6.0	133	10.95	322
PLCQ-1912/3136/2	115	1.98	6.0	135	11.40	330
PLCQ-1912/3136/3	115	2.00	6.0	141	11.77	328
Average=					11.37	327



Test Method : ASTM D 412-06a(Reapproved 2013)
Conditioning of Sample : ASTM D 412-06a(Reapproved 2013); Section 9.0
Method variation : None.
Remarks : None.

Results relate only to the item tested.

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Authorized Signatory
003
سكيب حسين
Saqib Hussain
Special Testing Supervisor

المكتب : Offices:
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الفحص ذ.م.م - مجمع دبي للاستثمار
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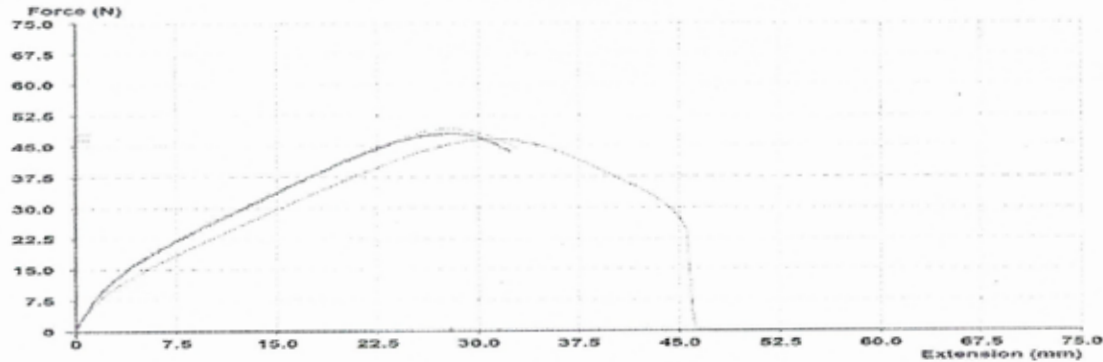


REPORT ON DETERMINATION OF TEAR STRENGTH OF EPDM RUBBER

Client	: Zenith Rubber Industries Middle East LLC	Report No	: PLCR-1912/5881
Address	: P.O. Box 35542, Ras Al Khaimah, UAE	Lab Project No	: P-3350
Contractor	: NP	Sample No	: PLCQ-1912/3136
Consultant	: NP	Date of Sampling	: 18/12/2019
Project	: NP	Date sample received	: 19/12/2019
Sample Description	: EPDM Rubber	Date test started	: 21/12/2019
Sample Name	: EPDM Rubber Compound for Profiles / Sheetings	Date test completed	: 21/12/2019
Manufacturer	: Client	Report Date	: 22/12/2019
Sampled by	: Client	Sample Size	: 150 x 150 mm
Client Ref. No.	: ZRI/LPO/498/2019	Room Temperature	: 24°C
Sample code	: CVEP 70	Relative humidity	: 50%
Type of Machine used	: Universal Testing Machine	Speed of Machine	: 500 mm/min
Die type used	: Angle test piece	Tested by	: JR

Test Data

Lab Ref. No.	Width (mm)	Thickness (mm)	Max. Force (N)	Tear Strength (kN/m)
PLCQ-1912/3136/1	12.7	2.03	47	23.0
PLCQ-1912/3136/2	12.7	2.07	48	23.2
PLCQ-1912/3136/3	12.7	2.01	49	24.6
Average =			48	23.6
Standard Deviation=			1.3	0.8



Tear Strength Test Method : ASTM D 624-98
Conditioning of specimen : ASTM D 624-98 Cls. 12
Method variation : None
Remarks : None



Authorized Signatory
003
سابق حسين
Saqib Hussain
Special Testing Supervisor

Results relate only to the item tested.

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Material Lab Testing Services L.L.C. - Abu Dhabi:- P.O. Box - 61831. Tel: +971 2 5503040 Fax: +971 2 5503041. Email: mlab@mlab.ae, Website:



REPORT ON DETERMINATION OF COMPRESSION SET OF EPDM RUBBER

Client : Zenith Rubber Industries Middle East LLC Report No : **PLCR-1912/5882**
Address : P.O. Box 35542, Ras Al Khaimah, UAE Lab Project No : **P-3350**
Contractor : NP Lab Ref. No. : **PLCQ-1912/3136**
Consultant : NP Date of Sampling : 18/12/2019
Project : NP Date Sample Received : 19/12/2019
Sample Description : **EPDM Rubber** Date test started : 21/12/2019
Sample Name : **EPDM Rubber Compound for Profiles / Sheetings** Date test completed : 22/12/2019
Report Date : 26/12/2019
Sample brought by : Client Source of sample : Client
Size of test Specimen : 29 mm ϕ x 12.5 mm thick Sampled by : Client
Sample code : CVEP 70 Client Ref. No. : **ZRI/LPO/498/2019**

Type of Test piece Used : Type 1 Test Temperature : 70°C
Relative Humidity : 50% Duration of Specimen at test Temperature : 22 hours
Testing Room Temp. : 24°C Amount of Compression Employed : 25%
Cooling Period : 30 minutes Tested by : JR

Test Results:

Lab Ref. No.	Original Thickness (mm)	Final Thickness (mm)	Thickness of Spacer (mm)	Compression Set (%)
PLCQ-1912/3136/1	12.52	12.19	9.50	10.9
PLCQ-1912/3136/2	12.53	12.21	9.50	10.6
PLCQ-1912/3136/3	12.50	12.18	9.50	10.7
Average =	12.52	12.19	9.50	10.7

Test Method : **ASTM D 395-16 (Method B)**
Method variation : None
Remarks : None



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REPORT ON TENSILE STRENGTH & ELONGATION OF EPDM RUBBER AFTER HEAT AGEING

Client	: Zenith Rubber Industries Middle East LLC	Report No	: PLCR-1912/5941
Address	: P.O. Box 35542, Ras Al Khaimah, UAE	Lab Project No	: P-3350
Contractor	: NP	Lab Ref. No.	: PLCQ-1912/3136
Consultant	: NP	Date Sample Received	: 19/12/2019
Project Name	: NP	Date Test Started	: 21/12/2019
Sample Description	: EPDM Rubber	Date Test Completed	: 25/12/2019
Sample Name	: EPDM Rubber Compound for Profiles / Sheetings	Report Date	: 26/12/2019
Source of Sample	: Client	Conditioning Temperature	: 23±2°C
Sample code	: CVEP 70	Relative Humidity	: 50±5%
Client Reference No.	: ZRI/LPO/498/2019	Sampled by	: Client
Size of specimen	: Dumbell Shape (Die C)	Sample brought in by	: Client
Type of Grip	: Wedge Grips	Duration of Exposure	: 70 hrs
		Tested by	: JR

Introduction

Zenith Rubber Industries Middle East LLC appointed MLab for determination of effects of thermal ageing on tensile strength & elongation of EPDM Rubber in accordance with ASTM D573. EPDM Rubber was kept in oven for 70 hrs @ 70°C in accordance with ASTM D 573.

Test Data for Tensile Strength & Elongation:-

Before Ageing			
Lab Ref. No.	Width (mm)	Tensile Strength (Mpa)	Elongation (%)
PLCQ-1912/3136/1	6.0	10.95	322
PLCQ-1912/3136/2	6.0	11.40	330
PLCQ-1912/3136/3	6.0	11.77	328
Average =		11.37	327

After Ageing			
Lab Ref. No.	Width (mm)	Tensile Strength (Mpa)	Elongation (%)
PLCQ-1912/3136/4	6.0	12.26	261
PLCQ-1912/3136/5	6.0	12.56	262
PLCQ-1912/3136/6	6.0	11.84	274
Average =		12.22	266



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REPORT ON SHORE 'A' HARDNESS OF EPDM RUBBER AFTER HEAT AGEING

Client	: Zenith Rubber Industries Middle East LLC	Report No :	PLCR-1912/5879/2
Address	: P.O. Box 35542, Ras Al Khaimah, UAE	Lab Project No :	P-3350
Contractor	: NP	Lab Ref. No. :	PLCQ-1805/1293
Consultant	: NP	Date of Sampling :	18/12/2019
Project	: NP	Date Sample Received :	19/12/2019
Sample Description	: EPDM Rubber	Date test started :	21/12/2019
Sample Name	: EPDM Rubber Compound for Profiles / Sheetings	Date test completed :	25/12/2019
		Date of Calibration :	25/12/2019
Source of sample	: Client	Report Date :	26/12/2019
Sample brought by	: Client	Oven Temperature :	70°C
Sampled by	: Client	Duration of specimen kept in oven :	70 hrs
Sample code	: CVEP 70	Testing Room Temp. :	24°C
Client Ref. No.	: ZRI/LPO/498/2019	Relative Humidity :	50%
Thickness of specimen	: 2 mm	Tested by :	JR

Test Parameters	Before Ageing	After Ageing
Shore 'A' Hardness	A/70/1	A/73/1
Change in Hardness	+3	

Test Method : ASTM D 573, ASTM D 2240 -05(Reapproved 2010)
Method variation : None
Remarks : Type A Durometer was used to carry out the test.
: Specimens were piled up three times to get the required thickness.



Results relate only to the item tested.

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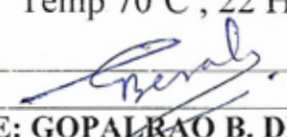


ATTUNED POLYMERS LABORATORIES

Corrs. Add.: 308-313, Rajasthan Technical Centre, Patanwala Estate, L. B. S. Marg, Ghatkopar (W),
Mumbai-400 086. INDIA.. ☎ : 0091-22-2500 1556 / 3282 / 4513 Fax : 0091-22-2500 3282
E-Mail : attuned11@yahoo.com / attuned03@yahoo.com

Report No. : 5529 / 2019 – 2020	Date : 15.01.2020
Customer Name & Address : Zenith Rubber Industries Middle East LLC Po Box 35542, Ras Al Khaimah UAE	Customer Letter Ref. : 18.12.2019
	Date of Receipt of Sample : 07.01.2020
	Date of Start of Test : 07.01.2020
Page No. : 1 / 2	Date of Completion of Test : 11.01.2020

TEST REPORT

Sample Reference given by Customer :	EPDM Rubber Compound For Profiles / Sheeting Sample Code : CVEP 70
Sample Description :	Black Color Rubber Slab & Button
Test :	Test Result
➤ Hardness (Shore A) (ASTM D – 2240)	67
➤ Tensile Strength (MPa) (ASTM D – 412)	10.53
➤ Elongation @ Break (%) (ASTM D – 412)	300
➤ Anguler Tear (kg / cm) (ASTM D – 624)	27.07
➤ Compression Set (%) (ASTM D – 395 Method B) Temp 70°C , 22 Hrs , 25% Deflection	15.70
 NAME: GOPALRAO B. DESALE	Cont.... DESIGNATION: LAB INCHARGE

The information given in this report is based on the sample/s given by the customer and is true to best of our knowledge. We are not liable for any legal action taken based on this report. Test report shall not be reproduced except in full, without written approval of the laboratory.

- Sample not drawn by us.
- Results relate only to the items tested.
- Only typed matter should be considered as part of the report.

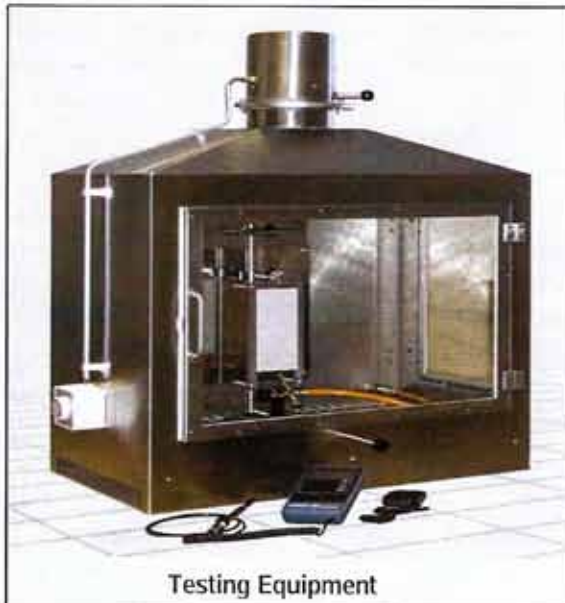


FIRE TEST REPORT

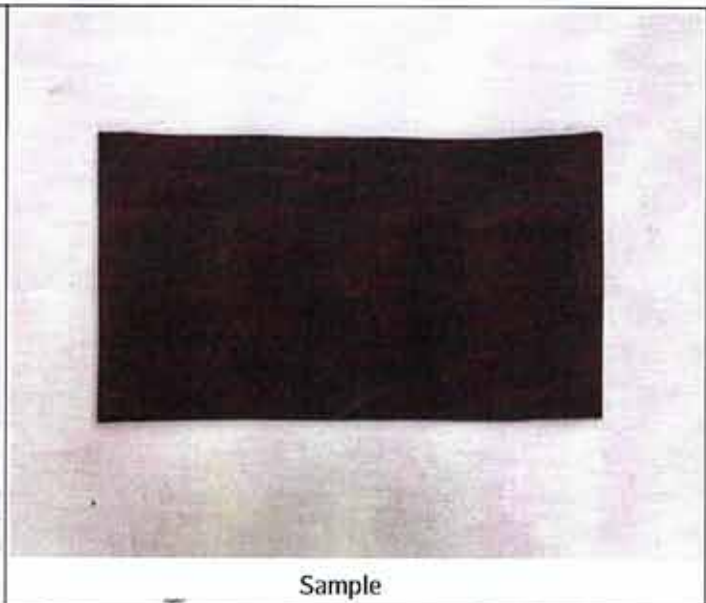
EN 13501 Class E

Ignitability of Products Subjected to Direct Impingement of Flame - Single-Flame Source Test (BS EN ISO 11925-2:2010)

Sponsor	: Zenith Rubber Industries Middle East LLC
Address	: P.O.Box – 35542 ,Al Hamra Industrial Area, Ras Al Khaimah, UAE
Product Description	: EPDM Rubber Compound for Profiles / Sheetings Code: CVEP 70
Date of Sampling	: 02-07-2020
Product Manufacturer	: Zenith Rubber Industries Middle East LLC
Sample Receiving Date	: 05-07-2020
Lab Reference No.	: FRQ-2007/416
Lab Project No.	: FR-0063/DIP
Sponsor Telephone	: +971 7 243 5299
Test Completion Date	: 07-07-2020
Report Issue Date	: 08-07-2020



Testing Equipment



Sample

Report No. FRR-2007/416

Lab Project No. FRR-0063/DIP

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1: Introduction:

Zenith Rubber Industries Middle East LLC, R.A.K appointed Material Lab Testing Services L.L.C for determining the ignitability of their product in accordance to BS EN ISO 11925-2:2010. The product were sampled by client and received at Material Lab Testing Services LLC on 05-07-2020.

Purpose of Test

To evaluate the ignitability of a product under exposure to a small flame when tested in accordance with the test specified in BS EN ISO 11925-2 : 2010 "Reaction To Fire Tests – ignitability of products subjected to direct impingement of flame - single flame source test".

2: Summary of Test Method:

The specimens were tested in a combustion chamber. A burner is used to apply the small flame to the test specimen on surface or edge exposure areas. The flame is brought in contact with the test specimens and applied for a certain time period and the observations & results are noted.

3: Test Equipments:

Following instruments were used to conduct the test.

- Test Room
- Combustion Chamber
- Ignition Source
- Fuel
- Specimen Holder
- Support
- Timing Device
- Template
- Flame-height measuring device
- Burner spacer for edge flame impingement
- Burner Spacer for surface flame impingement
- Anemometer
- Filter paper and tray



4: Specimen Preparation:

Twelve cut specimens were provided by client with sizes of 250 mm long x 90 mm wide (i.e. six specimens cut in longitudinal direction and six specimens cut in transverse direction). The specimens were placed against the substrate and held firmly in place by the specimen holder for surface exposure and tested without substrate for edge exposure.

5: Sample Details :

Product description	EPDM Rubber Compound for Profiles / Sheetings Code: CVEP 70 EPDM gasket / EPDM Profiles & sheeting is a black color both side smooth finish rubber sheet.
Specific gravity	1.30 ± 0.05
Thickness	1.5mm
Colour	Black
Flame Retardant (FR) (if applied)	None (as confirmed by client)
Substrate	Product reference: Fibre Cement Board (non-combustible) Manufacturer: Everest industries Ltd., India Thickness: 9 mm thick Density: 1420 kg/m ³

Note: all above details provided by client unless otherwise mentioned.

6: Conditioning Parameters:

Prior to test, the prepared specimens were conditioned for 48 hours until a constant mass was achieved at a temperature of 23 °C and a relative humidity of 50% in accordance to BS EN 13238:2010.
Also the filter papers were conditioned for 48 hours at a temperature of 23 °C and a relative humidity of 50% in accordance to BS EN 13238:2010.

7: Test Results :

Flame application time: 15 seconds and Total test duration : 20 seconds.

(A) Surface Exposure:

Flame Application: Flame applied at centreline of specimen, 40mm above the bottom edge

(i) Direction 1 (specimen cut lengthwise)

Sr. No#	Test Specimen	Occurrence of ignition	Flame reaches 150mm from point of application	Time to reach 150 mm	Ignition of the filter paper
1	Specimen 1	No	N/A	N/A	No
	Specimen 2	No	N/A	N/A	No
	Specimen 3	No	N/A	N/A	No

(ii) Direction 2 (specimen cut crosswise)

Sr. No#	Test Specimen	Occurrence of ignition	Flame reaches 150mm from point of application	Time to reach 150 mm	Ignition of the filter paper
2	Specimen 1	No	N/A	N/A	No
	Specimen 2	No	N/A	N/A	No
	Specimen 3	No	N/A	N/A	No



(B) Edge Exposure:

Flame Application: Flame applied at mid-point on the bottom of test specimen.

(iii) Direction 1 (specimen cut lengthwise)

Sr. No#	Test Specimen	Occurrence of ignition	Flame reaches 150mm from point of application	Time to reach 150 mm	Ignition of the filter paper
1	Specimen 1	Yes	No	N/A	No
	Specimen 2	Yes	No	N/A	No
	Specimen 3	Yes	No	N/A	No

(iv) Direction 2 (specimen cut crosswise)

Sr. No#	Test Specimen	Occurrence of ignition	Flame reaches 150mm from point of application	Time to reach 150 mm	Ignition of the filter paper
2	Specimen 1	Yes	No	N/A	No
	Specimen 2	Yes	No	N/A	No
	Specimen 3	Yes	No	N/A	No

In accordance to EN 13501-1:2018 table 1, vertical flame spread for Class E products shall be less than 150mm within 20 seconds of test time and no ignition of filter paper, which the above product fulfills.

8: Observation :

During the edge flame exposure small particles fall but doesn't ignite the filter paper, combustion continues after the test time and light grey smoke is observed during the combustion time.

9: Remarks:

- The test results relate to the behavior of the test specimen of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.
- The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition of the product may significantly affect the performance during the test and may therefore invalidate the test results.
- No deviations from the test method.
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Tested by


Mohammed Adel
Fire Testing Engineer

Reviewed By


Binha Varghese
Technical Manager

Approved by


Zuhaib Saleem
Fire Testing Manager



Other products from our company – Rubber sheets & Rubber compound

As mentioned in the introduction we are among the largest producers / exporters of various types of rubber sheets in the global market. Our range of sheets finds extensive usage in the following industrial segment.

- General purpose NR/SBR sheets for gaskets, packaging & wrapping purpose.
- For the mining / quarries industry as lining & skirting.
- For the pipe coating & sand blasting.
- For the anti vibration & load bearing.
- For the industrial flooring, transit mat purpose as well as general purpose anti slip/anti skid applications.
- For the industrial use in Electro mechanical / Electrical insulation industry.
- For the waterproofing & water sealing application.
- For the oil and refineries as oil resistance sheet offering anti swell properties.
- For the food industry in the conveyor segment.
- For the lining purpose in potable water tank, mild & moderate acid tank etc
- For the weather resistance, high temperature performance sheets offering resistance from -25°C to 300°C
- For the Ozone & UV protection.
- For high performance mechanical properties required in construction/mining industry.

We are offering sheet from 0.70 mm to 50 mm thickness in 1.0 mtr to 1.5 mtr width and the length in the multiple of 10 mtr with cotton / nylon reinforcement or without any reinforcement in both side smooth or fabric finish.

Specification for general purpose NR/SBR sheet:

Properties	Test Method	Unit	LCNR 70160	ECNR 70160	SX 70150	GPNR 65135	MNR 65125
Density	ASTM D 297	g/cm ³	1.60 ± 0.05	1.60 ± 0.05	1.50 ± 0.05	1.35 ± 0.05	1.25 ± 0.05
Hardness	ASTM D 2240	° Shore A	70 ± 5	70 ± 5	70 ± 5	65 ± 5	65 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	20 – 25	30	35	70	100
Elongation	ASTM D 412	%	150	200	200	350	350
Abrasion	ASTM D 5963	MM ³	550	500	475	400	350
Compression set	ASTM D 395 B	%	45	45	40	35	30
Tear strength	ASTM D 624	Kg/cm	10	12	15	27	30

Specification for special purpose NR/SBR sheet in various color:

Properties	Test Method	Unit	AAGP 45120	AAPARA 45115	AATG 45105	AATQ 40098	AAPG 38098
Density	ASTM D 297	g/cm ³	1.20 ± 0.05	1.15 ± 0.05	1.05 ± 0.05	0.98 ± 0.02	0.98 ± 0.02
Hardness	ASTM D 2240	° Shore A	45 ± 5	45 ± 5	45 ± 5	40 ± 5	38 ± 3
Tensile Strength	ASTM D 412	Kg/cm ²	100 - 125	150 – 170	170	200	220
Elongation	ASTM D 412	%	450	550	600	700	700
Abrasion	ASTM D 5963	MM ³	250	200	175	120	120
Compression set	ASTM D 395 B	%	25	20	20	20	20
Tear strength	ASTM D 624	Kg/cm	25	30	30	35	40

Specification for general & special purpose Neoprene sheet:

Properties	Test Method	Unit	LCNE 70150	ECNE 70145	GPNE 70135	SNE 65135	EBNE 65135
Density	ASTM D 297	g/cm ³	1.50 ± 0.05	1.45 ± 0.05	1.35 ± 0.05	1.35 ± 0.05	1.35 ± 0.05
Hardness	ASTM D 2240	° Shore A	70 ± 5	70 ± 5	70 ± 5	65 ± 5	65 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	35	45	70	100	165
Elongation	ASTM D 412	%	200	250	300	350	400
Abrasion	ASTM D 5963	MM ³	500	500	400	300	200
Compression set	ASTM D 395 B	%	45	40	35	25	15
Tear strength	ASTM D 624	Kg/cm	12	15	25	30	40

Specification for general & special purpose NBR sheet:

Properties	Test Method	Unit	ECNB 70150	GPNB 70145	MNB 65135	PNB 65120	NBR 45
Density	ASTM D 297	g/cm ³	1.50 ± 0.05	1.45 ± 0.05	1.35 ± 0.05	1.20 ± 0.05	1.15 ± 0.05
Hardness	ASTM D 2240	° Shore A	70 ± 5	70 ± 5	65 ± 5	65 ± 5	45 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	35	50	100	150	70
Elongation	ASTM D 412	%	200	300	350	450	400
Abrasion	ASTM D 5963	MM ³	550	450	300	175	NA
Compression set	ASTM D 395 B	%	45	40	30	20	20
Tear strength	ASTM D 624	Kg/cm	12	18	25	35	20

Specification for general & special purpose EPDM sheet:

Properties	Test Method	Unit	ZENIFLEXX 100 P	LCEP 70145	GPEP 65130	SEP 65120	PEP 65120
Density	ASTM D 297	g/cm ³	1.15 ± 0.05	1.45 ± 0.05	1.35 ± 0.05	1.20 ± 0.05	1.15 ± 0.05
Hardness	ASTM D 2240	° Shore A	65 ± 5	70 ± 0.05	65 ± 5	65 ± 5	65 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	90	45	60	90	100
Elongation	ASTM D 412	%	350	250	300 – 350	350	400
Abrasion	ASTM D 5963	MM ³	250	500	450	350	270
Compression set	ASTM D 395 B	%	24	40	35	25	20
Tear strength	ASTM D 624	Kg/cm	30	15	20	25	30

Specification for Electrical insulation sheet:

Properties	Test Method	Unit	BS 921:1976	AS 2978:1995	VDE 0303	IEC 61111
Density	ASTM D 297	g/cm ³	1.60 ± 0.05	1.60 ± 0.05	1.60 ± 0.05	1.45 ± 0.05
Hardness	ASTM D 2240	° Shore A	70 ± 5	70 ± 5	75 ± 5	65 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	50	50	50	50
Elongation	ASTM D 412	%	250	250	250	250
Abrasion	ASTM D 5963	MM ³	550	550	550	500
Compression set	ASTM D 395 B	%	35	35	35	30
Tear strength	ASTM D 624	Kg/cm	18	18	20	20

Specification for NR/SBR flooring sheet:

Properties	Test Method	Unit	COIN MAT	RIB MAT	MARBLE	ANTISKID/ FF
Density	ASTM D 297	g/cm ³	1.60 ± 0.05	1.45 ± 0.05	1.65 ± 0.05	1.60 ± 0.05
Hardness	ASTM D 2240	° Shore A	80 ± 5	65 ± 5	80 ± 5	75 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	50	45	50	50
Elongation	ASTM D 412	%	250	250	250	250
Abrasion	ASTM D 5963	MM ³	550	450	500	550
Compression set	ASTM D 395 B	%	40	40	40	40
Tear strength	ASTM D 624	Kg/cm	15	18	20	18

Specification for Viton, Silicon, Hyplon & Butyl rubber sheet:

Properties	Test Method	Unit	VITON	SILICONE	HYPALON	BUTYL
			VI 70190	SI 60120	HN 65135	IR 65120
Density	ASTM D 297	g/cm ³	1.95 ± 0.05	1.20 ± 0.05	1.35 ± 0.05	1.20 ± 0.05
Hardness	ASTM D 2240	° Shore A	75 ± 5	60 ± 5	65 ± 5	65 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	50	60	100	90
Elongation	ASTM D 412	%	200	250	250	350
Abrasion	ASTM D 5963	MM ³	NA	NA	200	300
Compression set	ASTM D 395 B	%	45	30	35	45
Tear strength	ASTM D 624	Kg/cm	18	20	25	25

Specification for Rubber compound:

Properties	Test Method	Unit	NR 60 SP for Molding	NR 70 SP for Molding	PRINTING ROLL	NREX 70145 for Extrusion	CVEP 70 for Microwave
Density	ASTM D 297	g/cm ³	1.10 ± 0.05	1.20 ± 0.05	1.15 ± 0.05	1.45 ± 0.05	1.30 ± 0.05
Hardness	ASTM D 2240	° Shore A	60 ± 5	70 ± 5	30 ± 5	70 ± 5	70 ± 5
Tensile Strength	ASTM D 412	Kg/cm ²	200	180	25	100	75
Elongation	ASTM D 412	%	400	300	600	300	250
Abrasion	ASTM D 5963	MM ³	150	125	NA	400	300
Compression set	ASTM D 395 B	%	20	20	25	30	20
Tear strength	ASTM D 624	Kg/cm	50	45	8	25	20

