RUBBER FOR THE AUTOMOTIVE INDUSTRY

Let Primasil work with you for the optimum solution

primasil silicones

Rubber materials and products

THE OPTIMUM AUTOMOTIVE RUBBER SOLUTION

Reliance on suppliers' interpretations of your material requirements can lead to underperforming or over-engineered components. Both result in unnecessarily high costs. Primasil formulate the materials and manufacture the components, so you can trust our experts to find the best solution for your business.

All silicone rubber materials are formulated, mixed, and tested on site in the UK. All rubber materials are developed hand-in-hand with our experienced suppliers. Our approach to optimising solutions applies to both brand new and re-sourced components, and whether we are supplying the finished components or just the materials we work to TS16949 standards.

No other company in the UK can offer you this capability.

CONSISTENT RESULTS ACROSS MANY INDUSTRIES

Optimised solutions
All industries strive for the best value in components, but automotive customers are especially demanding. We understand this, and work in partnership with you to ensure the materials and components we supply exactly match your requirements.

Expertise
With over 35 years experience in supplying a diverse range of industries, Primasil has developed an excellent knowledge of rubber and an exhaustive understanding of silicone rubber. This expertise is employed across countless applications, often challenging the incumbent solution.

Skilled workforce
Many of our operators have decades of experience, so there are no 'people' barriers to implementing better manufacturing techniques. In fact, our workforce frequently suggests process improvements – and this freedom of thought results in better products for our customers.

Quality
Regardless of the industry, Primasil embraces the respective quality standards. Where other stipulations make sense, these are adopted across industries. Our aim is to exceed certification levels when this results in better quality and value for our customers.

Independence
Different raw material suppliers have specific areas of expertise. Primasil has an awareness of these and, unconstrained by alliances, chooses the materials that work best for you in terms of performance, supply and price.

All in one
Unlike other silicone rubber manufacturers, we have all of our services under one roof – here in the UK. This enables every element of material formulation and mixing, along with finished product manufacture and development, to be closely controlled and quickly adjusted.

Manufacturing in the UK or Czech Republic
Some applications do not require materials with advanced properties. These may have a lower cost, and manufacture can then make sense in our wholly owned Czech Republic facility.

PRIMASIL: THE OBVIOUS CHOICE FOR AUTOMOTIVE

High engine temperatures, extended warranties and the drive to reduce emissions all demand high-quality rubber products. Silicone rubber offers tremendous advantages for automotive companies seeking to meet stringent industry requirements while providing opportunities for competitive advantage. Other rubbers available include EPDM, NBR, FKM, AEM, & CSM.

Consumers' distinct requirements often cannot be satisfied by incumbent materials. Aesthetic and functional needs, coupled with regulatory restraints, demand a more adaptable solution. The potential for material advantages can only be realised by working with a supplier determined to step away from 'off-the-shelf' solutions. This is why you will find Primasil's approach so refreshing. We have developed more than 5,000 materials, along with manufacturing techniques, for a wide range of applications, and will work with you to satisfy your requirements.

As experts in automotive rubber solutions Primasil materials and components include:

Brakes
The material for these safety-critical parts requires special attention to withstand extreme temperatures as well as frictional heat from the braking process. Hoses, cups and boots all demand both silicone rubber and rubber.

Chassis
Shock absorber seals, vibration mounts and air springs, contributing to the ride quality of the vehicle, all require rubber parts.

Electrical
Electrical components must be sealed from outside moisture and debris.

Grommets
Wiring system grommets, harness plugs and cable grommets are used with enclosures and panels where the cable entry point must be sealed from moisture and dust.

Engine gaskets and seals
To provide resistance to fuel and high temperatures FKM and fluorosilicone elastomers are typically used. Primasil has extensive experience in all moulded parts including fuel injection seals, fuel pump seals, manifold gaskets and diaphragms.

Exhaust hangers
These demand excellent damping properties, with high thermal resistance and mechanical performance.

Fuel cell gaskets
Along with the prevention of out-gassing and degradation, a consistent thickness of gasket is essential for fuel cells. We supply the leading UK fuel cell manufacturers, working alongside key partners in two European framework fuel cell development programmes.

Fuel seals
Hostile engine environments and tight emission regulations require the best quality rubber. With Primasil you can create fuel system seals, diaphragms and gaskets which deliver great performance.

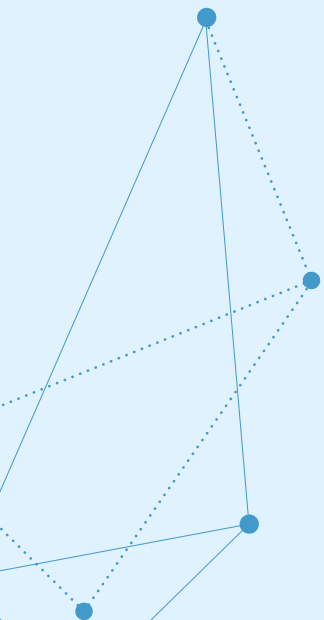
Headlight seals
Material must be UV resistant with a high compression set to ensure moisture cannot enter the headlight. We are experienced in providing superior seals to mitigate risk of failure.

Hoses
As a leading supplier of silicone rubber compounds for automotive hoses Primasil understands the material tolerances needed for oil, heat and ozone. Our compounds also offer durability for long term life applications.

HVAC
The elastomer of choice is HNBR, with its high resistance to conditions in these systems.

Rubber-to-metal bonded components
Benefit from our extensive experience across many industries. Our rubber-to-metal bonded components are used to isolate vibration, absorb shock and support load while remaining highly durable and heat resistant.

Spark plug boots
Primasil knows that outstanding electrical insulation and thermal resistance are needed, so we have developed a selection of suitable materials and custom-manufactured parts.



CUSTOM MADE RUBBER COMPONENTS

The manufacture of rubber parts, unlike that of plastic components, requires extensive experience to achieve the right result. An intimate knowledge of how the material behaves when processed, coupled with tooling design expertise, is an absolute necessity. Primasil has been a leader in this field for many years – from single prototypes to millions of parts per month. Our customers tell us we are very good at it.

The Primasil new product team works closely with customers to identify the most efficient method of production. Time constraints, tooling costs and forecast volumes are all taken into account. By insisting on committing resources in the early stages, we ensure that the solution is cost-effective, scalable and practical.

Rubber components for the automotive industry are usually manufactured using moulding or extrusion techniques.

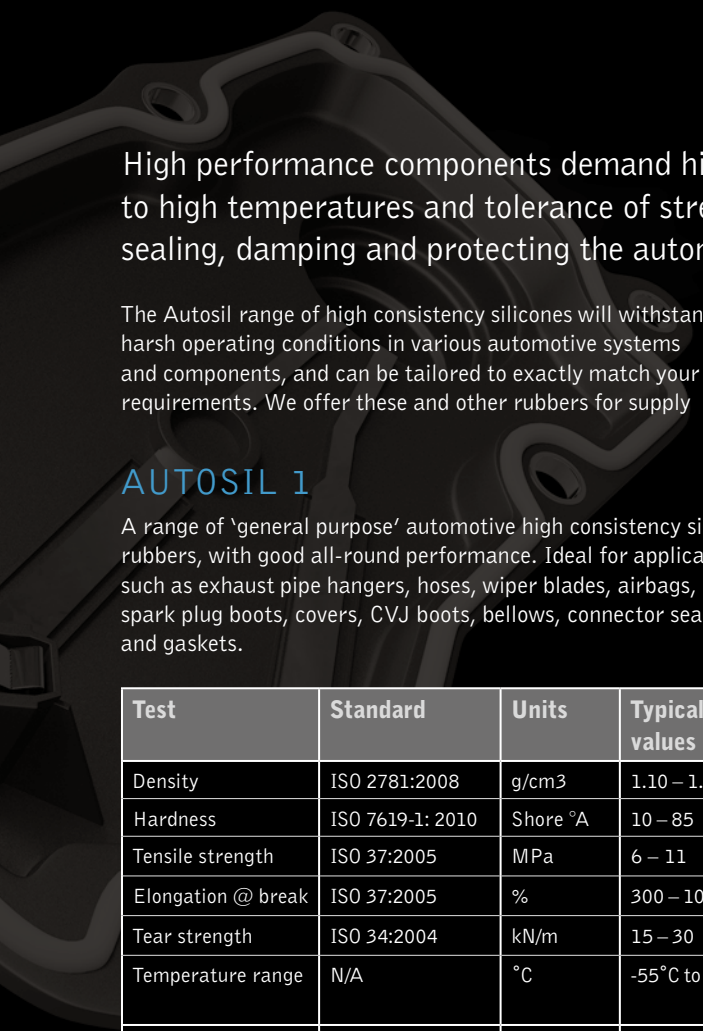
Moulding
Compression and injection technologies are used to mould rubber components. The chosen technique depends on the design of the part, volumes required and the tooling budget. Compression moulding, with its relatively low-cost tooling, is often sufficient for low volume parts. Injection moulding is more suitable for high volume parts and/or more complex parts which require greater precision.

Extrusion
Silicone profiles are used for sealing applications, internal trim, and for producing material from which parts may be punched. Primasil's automated punching process results in very low-cost parts – and as we mix the material on site, these are very competitively priced.


HIGH TEMPERATURE SEALS
SPARK PLUG BOOTS
CABLE GROMMETS
GROMMETS


ELECTRONIC CONTROL SYSTEM SEALS
FUEL SYSTEM SEALS
EXHAUST MOUNTS
RUBBER-TO-METAL BONDED
FUEL CELLS

MATERIALS



High performance components demand high performance materials. With excellent resistance to high temperatures and tolerance of stressful conditions, rubber is the perfect material for sealing, damping and protecting the automotive environment.

The Autosil range of high consistency silicones will withstand harsh operating conditions in various automotive systems and components, and can be tailored to exactly match your requirements. We offer these and other rubbers for supply direct to your own manufacturing process, or we can make the components for you, on our own premises.

Six Autosil ranges that are specifically designed for the automotive sector.

AUTOSIL 1

A range of 'general purpose' automotive high consistency silicone rubbers, with good all-round performance. Ideal for applications such as exhaust pipe hangers, hoses, wiper blades, airbags, spark plug boots, covers, CVJ boots, bellows, connector seals and gaskets.

Test	Standard	Units	Typical values
Density	ISO 2781:2008	g/cm3	1.10 – 1.23
Hardness	ISO 7619-1: 2010	Shore °A	10 – 85
Tensile strength	ISO 37:2005	MPa	6 – 11
Elongation @ break	ISO 37:2005	%	300 – 1000
Tear strength	ISO 34:2004	kN/m	15 – 30
Temperature range	N/A	°C	-55°C to 200°C
Compression set: 22hours@175°C	ISO 815-1:2008	%	15 – 45

AUTOSIL 2

High-strength with outstanding tear resistance properties. Ideal for exhaust pipe hangers, hoses, spark plug boots, vibration dampers, engine mounts.

Test	Standard	Units	Typical values
Density	ISO 2781:2008	g/cm3	1.10 – 1.20
Hardness	ISO 7619-1: 2010	Shore °A	30 – 75
Tensile strength	ISO 37:2005	MPa	8 – 12
Elongation @ break	ISO 37:2005	%	400 – 900
Tear strength	ISO 34:2004	kN/m	25 – 45
Temperature range	N/A	°C	-55°C to 200°C
Compression set: 22hours@175°C	ISO 815-1:2008	%	25 – 50

AUTOSIL 3

Low compression-set high consistency silicone rubbers, for applications requiring high elasticity and/or excellent sealing characteristics. Used for applications such as seals, o-rings, oil filter gaskets and manifold gaskets.

Test	Standard	Units	Typical values
Density	ISO 2781:2008	g/cm3	1.10 – 1.40
Hardness	ISO 7619-1: 2010	Shore °A	40 – 80
Tensile strength	ISO 37:2005	MPa	6.5 – 8
Elongation @ break	ISO 37:2005	%	170 – 500
Tear strength	ISO 34:2004	kN/m	12 – 17
Temperature range	N/A	°C	-55°C to 250°C
Compression set: 22hours@175°C	ISO 815-1:2008	%	10 – 18

AUTOSIL 4

Higher temperature resistance than Autosil 1, 2, and 3.

Test	Standard	Units	Typical values
Density	ISO 2781:2008	g/cm3	1.10 – 1.40
Hardness	ISO 7619-1: 2010	Shore °A	10 – 85
Tensile strength	ISO 37:2005	MPa	6 – 12
Elongation @ break	ISO 37:2005	%	170 – 1000
Tear strength	ISO 34:2004	kN/m	12 – 45
Temperature range	N/A	°C	-55°C to 315°C
Compression set: 22hours@175°C	ISO 815-1:2008	%	10 – 45

AUTOSIL 5

Fluoro-silicone rubbers, ideal for applications requiring improved oil and chemical resistance and good ageing in hot fuel vapours. Essential for applications that need outstanding resistance to chemicals, many kinds of solvents, lubricants, petrols, engine oils, ATF fluids and other aggressive fluids or greases which have an un-polar chemical nature.

Test	Standard	Units	Typical values
Density	ISO 2781:2008	g/cm3	1.35 – 1.70
Hardness	ISO 7619-1:2010	Shore °A	20 – 80
Tensile strength	ISO 37:2005	MPa	6.5 – 14
Elongation @ break	ISO 37:2005	%	150 – 470
Tear strength	ISO 34:2004	kN/m	8 – 45
Temperature range	N/A	°C	-60°C to 200°C
Compression set: 22hours@180°C	ISO 815-1:2008	%	8 – 30
Heat Resistance: 72hrs @ 200°C			
Hardness	ISO 7619-1: 2010	Shore °A	+2 to +5
Tensile Strength	ISO 37:2005	MPa	11 to -25
Elongation @ break	ISO 37:2005	%	-5 to -20
Oil Resistance: After immersion in IRM903 oil for 70hrs @ 150°C			
Hardness	ISO 7619-1: 2010	Shore °A	-2 to -6
Tensile Strength	ISO 37:2005	MPa	-5 to -25
Elongation @ break	ISO 37:2005	%	-5 to -18
Volume Swell	ISO 1817: 2011	%	+2.8 to +4.2
Fuel Resistance: After immersion in Fuel C for 72hrs @ 25°C			
Hardness	ISO 7619-1: 2010	Shore °A	-6 to -16
Tensile strength	ISO 37:2005	MPa	-15 to -50
Elongation @ break	ISO 37:2005	%	-15 to -45
Volume Swell	ISO 1817: 2011	%	+16 to +24

AUTOSIL 6

Liquid silicone rubbers (LSRs) encompass many specialist grades, such as oil bleeding for lubrication; low coefficient of friction for decreased wear; antistatic grades; self-adhesive grades for bonding; and high purity fuel cell grades. All of the liquid silicone rubber grades have very short cure times and are therefore particularly suitable for the economical production of high volume parts.

Test	Standard	Units	Typical values
Density	ISO 2781:2008	g/cm3	1.08 – 1.20
Hardness	ISO 7619-1: 2010	Shore °A	5 – 80
Tensile strength	ISO 37:2005	MPa	2 - 12
Elongation @ break	ISO 37:2005	%	200 – 1000
Tear strength	ISO 34:2004	kN/m	7 – 45
Temperature range	N/A	°C	-60°C to 250°C
Compression set: 22hours@175°C	ISO 815-1:2008	%	10 – 35

Non-silicone rubbers include:

- EPDM: An organic rubber that was originally developed for the automotive industry as a low-cost synthetic for tyres. It is one of the best economical rubbers for outdoor applications.
- NBR: Commonly referred to as Nitrile, and particularly resistant to petroleum based fluids. It remains the most economical and widely used rubber for this application.
- FKM: Commonly referred to as Viton® (DuPont), is an exceptional choice for rubber components used in extremely hostile chemical and oil environments. It has a high temperature rating (up to 250°C) but is very poor in low temperature applications (below -10°C).

Speciality grades such as AEM (Vamac® - Dupont) and CSM (Hypalon® - Dupont) are also available.

Along with our automotive specific materials, we have a wide range of other materials which may be of use to you.

QUALITY ASSURED

As suppliers to the aerospace, automotive, medical, and pharmaceutical industries for over three decades, the team at Primasil understands the importance of quality.

The first independent silicone company to achieve ISO 9001:2008 certification, we have backed this up with key industry certifications, including TS16949.

From initial enquiry through to product delivery we have mechanisms in place to ensure your requirements are met – and the 'right first time' mantra permeates all aspects of our organisation.

Full material testing on site provides total component traceability. As well as giving you complete confidence in us as your supplier, this allows reduction in inspection costs at your premises.

AGILE AND FLEXIBLE

Rapid material customisation, flexible batch sizes and last-minute delivery are commonplace at Primasil. Our size, independence and flat structure gives us the agility and flexibility to respond to our customers' needs.

Unconstrained by big company bureaucracy or difficult-to-reach locations, we add value quickly – providing feedback on new material possibilities and component design swiftly and impartially.

CASE STUDY

Gaskets for fuel cell stacks

A prominent developer of hydrogen fuel cell systems was embarrassed to have overlooked the importance of the gasket within their product. Reassurance that this was a common story across many industries did not relieve the pressure – a finished gasket was needed within two months.

Silicone rubber is used to seal the interface of the membrane electrode assembly and the individual cells of the proton exchange membrane fuel cell stack. The material for this product is key and must be selected carefully to prevent out-gassing, degradation, and leaching of the silicone's own ingredients. Consistent compression set and thickness of the gasket is also a crucial consideration.

Using our expertise and experience Primasil worked in partnership with the customer to ensure delivery of a high performance gasket within the demanding timeframe. This is just one of several different designs we have completed for a number of the UK's major fuel cell manufacturers.

Choose Primasil for your optimised automotive rubber requirements.

Why wouldn't you?

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