

GMS

Polymer Engineering Ltd

High speed Tool Making and Custom Moulders of Rubber and Plastics



- Injection, Compression and Transfer Moulding

- Seals and Gaskets

- Quality and Service

- Complete service—Design, tool making and manufacture

- Rubber to Metal bonding

- Any quantity production facilities



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ABOUT GMS

GMS Polymer Engineering Ltd is a custom moulder of rubber and plastic components and supplier of seals and gaskets. For over 25 years we have supplied custom designed and manufactured components to many industries including automotive, pharmaceutical, food, white goods, leisure and general engineering.



We have the capability to manufacture products from all types of natural and synthetic rubber, as well as TPE's and Thermoplastics. We have vast experience of the various properties and characteristics of these materials, enabling us to advise our customers of the most suitable rubber or plastic to be used for their application. We are very flexible to meet requirements regarding part size and volume, whether you need small intricate high volume components or larger low volume mouldings, we can assist and offer you the complete service including secondary operations and assembly work if required.

Not only can we manufacture existing parts but we can also support new projects/ products by assisting with design, material specification and prototyping. We also provide an in house tool-making/ tool-refurbishing service enabling us to be able to provide the 'complete' moulding service.



DESIGN AND TOOL MAKING

At GMS we can use both 2D and 3D CAD files, as well as conventional drawings or samples which means that we can quickly provide quotations and tooling without needing to engage third parties and so maintain total control and responsibility for your components from initial contact to finished parts.



Our design service will suggest cost saving ideas if appropriate or undertake the design of functional components to meet your requirements including material specification and prototypes. Key factors of effecting cost are type of material, number of cavities in the mould, cycle time and any manual operation needed before and after the moulding process.

GMS are able to advise or quote on both new or existing projects, our in house tool making capability equipped with modern CNC machinery and CAD/CAM systems mean that we can offer rapid and cost effective tooling solutions, whether for new moulds or the refurbishment/ conversion of existing tooling.

Some key points to consider at the design stage:-

- What will the part be used for?
- What quantity is required? How often?
- What products will come into contact with the part? (eg, chemicals, gases, oils, cleaning agents, etc)
- Will the part be subjected to very high or low temperatures? if so, continuously or intermittently?
- What colour(s) are preferred?
- What are the cost implications?



MATERIALS AND PROCESSES

GMS use a range of injection, transfer and compression moulding processes. The method used is largely dependant upon the quantity of parts that are required. Other factors include tooling type and the desired finish of components.

We have the experience and capabilities to process many materials including:-

- Nitrile
- PVC nitriles
- EPDM
- Fabric Reinforced
- Fluoroelastamers (including silver coated aluminium filled fluoro-silicone)
- HNBR
- Natural
- Neoprene
- Carboxylated Nitrile
- Colours
- SBR
- Silicone (including FDA and USP Class VI approved)
- Vamac
- Thermoplastics
- Viton
- Food grade materials

If you require any further information regarding the above materials, or any other please contact us.



Components produced through the process of compression moulding and some injection moulded parts produce flash (excess material) that needs to be removed. This can be done in a variety of ways including:-

- Cryogenic Freeze trimming— Components are frozen and bead basted to remove the brittle flash.
- Tear trimming— Where the part is purposely moulded to produce a very thin section of flash that can be pulled away easily.
- Hand trimming— Flash is removed by hand either with knives, razor blades or scissors.

The process used is dependant upon the shape and size of the part and also the type of material used.

Material Guide—RUBBER

Material		Natural Rubber	SBR	EPDM	Neoprene CR	Nitrile NBR	TPE	Silicone Si	Viton* FPM	Fluorosilicone Fsi
Properties										
Physical strength		✓✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✗	✓✓	✗
Electrical strength		✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓	✗	✓✓✓✓	✓✓✓✓	✓✓	✓✓✓✓
Compression set		✓✓	✓✓	✓✓	✓	✓✓	✓	✓✓	✓✓	✓✓
Resistance to	Heat	75°C	85°C	130°C	95°C	100°C	110°C	205°C	205°C	170°C
	Low Temp.s	-60°C	-55°C	-50°C	-35°C	-20°C	-40°C	-60°C	-20°C	-60°C
	Weathering	✗	✗	✓✓✓✓	✓✓✓✓	✓	✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓
	Oil	✗	✗	✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓
	Fuel	✗✗	✗✗	✗✗	✗	✓	✗	✗✗✗	✓✓✓✓	✓
	Chemical	✓	✓	✓✓	✓✓	✓✓	✓✓✓✓	✓	✓✓✓✓	✓✓
	Abrasion	✓✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✗	✓✓	✗
	Gases	✗	✓	✓	✓	✓	✓	✓	✓	✓
	Flame	✗	✗	✗	✓✓	✗	✓	✓	✓✓	✓✓
	Water	✓✓✓	✓✓	✓✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Hardness range (shore A)	30-95°	40-95°	30-85°	30-90°	40-100°	35-80°	40-80°	50-95°	40-80°	
Choice of colours	Available	Available	Available	Available	Available	Available	Available	Available	Available	
Cost factor	1	1	1	2	2	4	6	15	40	
Typical uses	Anti vibration mounts, hoses, sealing devices	Tyres, shoe soles, conveyor belts	Flat roofing tiles, bushes and gaskets, automotive parts.	Protective gloves, work-wear & cases, oil resistant applications	Industrial & automotive pads, Plumbing and appliances, O'rings	Electrically insulated parts, seals	Glazing, lining,, pharma & food hygiene equipment, sprays	Seals, gloves, O'rings	Seals, O'rings, high performance applications	

Key

*Du Pont Registered Trade Mark

Unsuitable	✗✗✗
Unsatisfactory	✗✗
Poor	✗
Fair	✓
Good	✓✓
Very Good	✓✓✓
Excellent/ Outstanding	✓✓✓✓

Please note: These material guide tables for Rubbers and Plastics display the general properties of each material type and are Intended to be used as a guide only. Extremes of variation may occur within each material type. GMS Polymer Engineering Ltd can not guarantee suitability and advise customers to carry out tests under actual service conditions.

Material Guide— Plastic

Material	PVC	Nylon 6	Nylon 66	Acrylic	Acetal	Polycarbonate	Polyethylene	Polypropylene	Polystyrene
Properties									
Heat deflection temperature	80°C	93°C	93°C	71°C	71°C	132°C	71°C	78°C	93°C
Max. Operating temperature	60°C	93°C	99°C	82°C	82°C	121°C	82°C	77°C	66°C
Flame resistance UL rating	HB-V-O	HB-V-O	HB-V-O	HB	HB	HB	HB-V-O	HB-V-O	HB
Choice of colours	Available	Available	Available	Available	Available	Available	Available	Available	Available
Cost Factor	1	2	3	2	2	3	1	1	1
Typical Uses	Shoe soles, Electrical insulation, Building products	Bushes, Bearings, Air filters, Levers	Bushes, Bearings, Air filters, Levers	Lenses, car light housings/ reflectors, keyrings,	Gears and Bearings, aerosol valves	Safety Helmets, Street light covers, machine guards	Kitchenware, lids and closures, packaging.	Crates, Handles, flexible joints	Cosmetic and food packaging, toys

In their natural state raw rubbers and basic plastics have limited uses but by mixing and combining different additives a whole range of possibilities occur. Rubbers and plastics are widely used in the production of industrial and consumer goods mainly due to their characteristics and properties mentioned in these data charts. GMS have been working with the various types of rubber and plastics for many years equipping us with extensive knowledge and experience to share with our customers. We are able to offer our advice and assistance to customers, whether you are developing a new part or replacing existing components that require improvements in performance, quality or even cost. We can help you select the most appropriate and cost effective material that would best suit your application in terms of the operating environment in which the parts will be used. Please contact us for more information.



Seals and Gaskets

GMS has many years experience of manufacturing and supplying quality seals to suit most industrial applications including the motor sport and pharmaceutical industries.



We also produce seals from various materials, either by complete moulding or hot vulcanising extruded sections. Examples of our seals include:-

- PTFE lined and elastomeric rotary shaft seals
- Pneumatic and Hydraulic seals and rod wipers
- Bearing Seals and Taper roller and ball bearings
- Leather and PTFE seal assemblies
- O'rings – 'Custom moulded' specials and standard sizes
- Lather cut washers and seals



We supply cut gaskets in non-metallic materials including:-

- Elastomers: EPDM, CR, NBR, FPM, VMQ
- Sponges: open and closes cell
- CAF: Asbestos – free fibre materials
- Plastics: Polythene, PTFE,PVC, PU, Nylon, etc



Our seals and gaskets are also used in some Formula 1 racing cars

If you would like some further information regarding our gaskets and seals, please feel free to contact us and we'll be happy to discuss your requirements.

General Mouldings

Over the years our range of mouldings and products have been developed based upon our customers requirements. The parts that we supply vary greatly in terms of type of rubber or plastic material used, size, quantity and application. This has enabled us to offer complete flexibility in order to meet the needs of our customers.



Typical products include:-

- Rubber feet
- Equipment housing/covers
- Bellows
- Gaiters
- Electrical connectors

Rubber to metal bonding

Another key service that we are able to offer is rubber to metal bonded products. We manufacture and supply products to serve a diverse range of industries including the automotive, Rail and military with items such as:-

- Anti vibration mounts,
- Sound proofing products,
- Rollers
- Bump Stops
- Anti friction seals (which involve rubber, metal and PTFE bonding)



Flexible fabric couplings

'The Hardy Type Disc'

Using original jigs and moulds purchased from 'Hardy Spicer', we custom make fabric and rubber flexible drive couplings for:-

- Vintage and classic cars,
- Buses,
- Lorries,
- Boats,
- Industrial drives,
- Generators and Pumps
- Mining machinery
- and many other applications.

They range in size from 50mm diameter up to 500mm. These parts are still widely used, especially when a special coupling is required and the volumes required do not warrant expensive tooling. We offer these as single units, but as in all of our moulding operations are also available as volume production.



For Bugatti, Rolls Royce and many more .



These couplings are prepared from staggered layers of rubberised fabric and vulcanised under pressure, this results in discs with considerably higher strength than those produced in pad form.

Although we supply some standard sizes, many couplings are custom made to individual customer specifications. The information that we require to enable us to manufacture accurately are as follows:-

- ID
- OD
- Fabric thickness
- PCD
- Bolt size

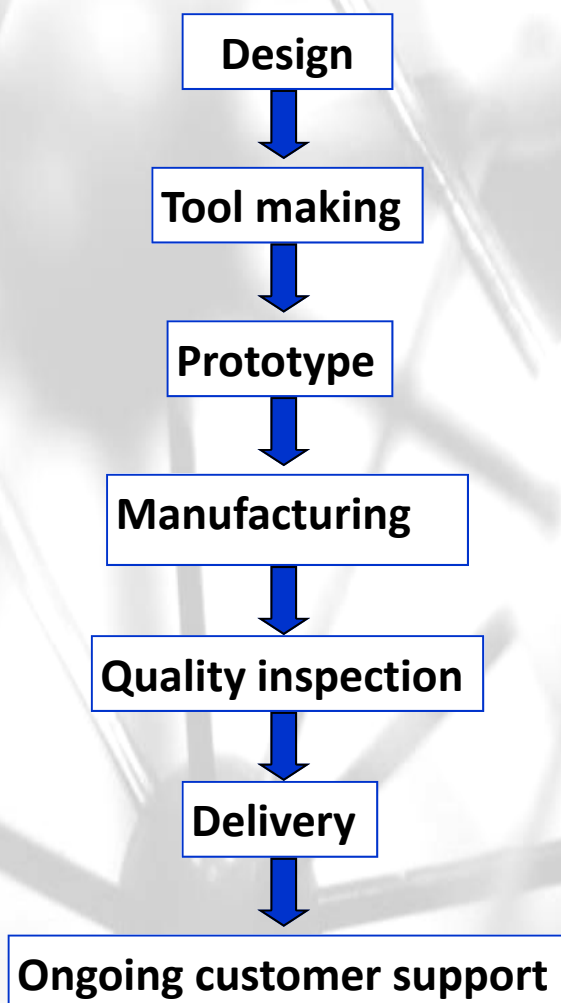
Please contact us for further information and assistance.

Quality and Service



At GMS we are dedicated to provide the highest possible standards of quality for all of its products and services. We have developed and fully implemented a quality management system that is ISO 9001:2000 approved, which ensures that our customers receive products and a service which meet specified requirements at all times. All incoming materials are checked and approved prior to manufacturing and then finished components are inspected and approved prior to despatch. It is our policy to operate to these standards continuously company wide.

At GMS we offer the complete Service



Custom Precision Moulding

Injection moulding

Compression moulding

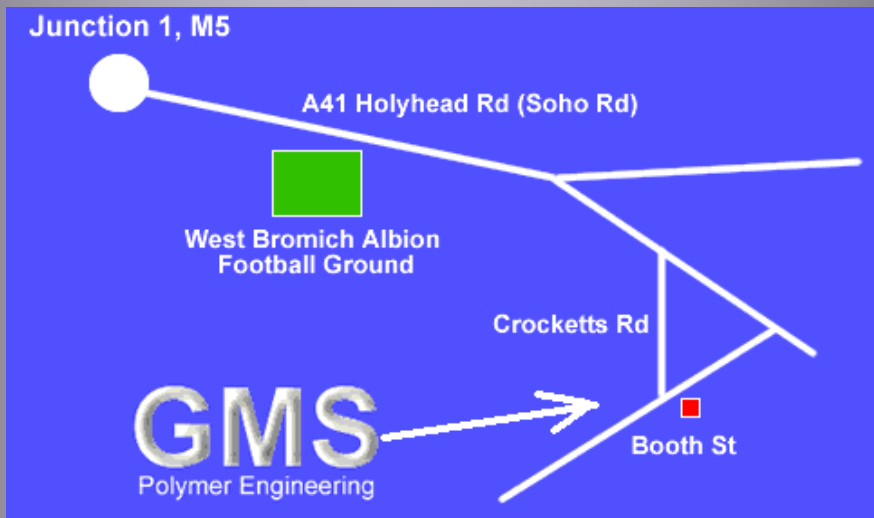
Transfer Moulding

Any quantity

All polymers including special applications, for eg.

- Food and Pharma Quality Mouldings
- Water quality moulding
- Flame retardant Mouldings





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