The obvious purpose for gasketing is to keep something in or keep something out. On the surface any of the following can suffice for particular gasket requirements:

- silicone caulk
- open cell foam tape
- vinyl extruded shape
- silicone compound extrusion

It is once again the challenge of the one responsible for making the buying determination to thoroughly understand the requirements beyond the commonplace.

The ultimate gasket is no gasket at all. Short of that cost-ineffectiveness solution, seeking alternatives must be accompanied by complete knowledge of the system parameters.

Silicone cement or caulk is suitable in many applications but will not withstand water pressure in the maintenance process. In more sophisticated contamination-free environments, a bigger potential problem is created by the out- gassing or migrating of contaminants.

This same migration can occur from the adhesives used to bond foam gasketing to the fixture. Additionally, this common, economical gasketing method is a maintenance nightmare and difficult to replace.

The nature of the foam will dictate its performance. Foams can vary in density: lower density foams generally deteriorate more quickly and are lighter in weight. They also inherently have better thermal and electrical insulative properties and typically have better fire resistance and self-extinguishing qualities as shown in their U.L. listings.

Depending upon the specific foam chosen, various other characteristics can be a factor. Toxicity from heat or fires can be a problem. Some foams have a low compression set which allows them to stay flexible through repeated maintenance procedures.

Vibration dampening will vary between foams. The proper foam in a proper design can help protect glass lenses from incidental contact and abuse.

Gasketing can function as a noise absorber, eliminating fixture vibration-related sound or dampening mounting vibration.

Chemical resistance and water absorption also varies for foams. Environment of high humidity and of particularly corrosive atmospheres can have a devastating effect on gasketing performance.

Applications which have a sensitivity to contamination require a corresponding sensitivity to type of foam or gaskets that are used in lighting equipment. To the extent that specified gasketing material is impervious to fungus growth, insect infestation and rodent damage will determine the integrity of the entire system.

Vinyl extrusions molded to fit a particular configuration of equipment component limit this migration problem but do not withstand harsh environments or regularly scheduled chlorinated water clean up. Vinyl out-gassing is demonstrated as the plasticizers used in the creation of the material "gas-off" and leave hardened, brittle deteriorating gaskets.

Long term flexibility is one major asset of silicone extrusion gasketing. When applied in conjunction with a design minimizing the gasket's exposure, a fine solution results.

The absence of adhesives also enhance the compression-fit, minimally designed silicone extrusion solution.

As mentioned before, the best gasket is not a gasket at all. An example of this is seam welding of metal. Accurate and continuous welds eliminate the need for any gasketing and the corresponding problems.

For further information on the relative merits of various gasketing systems, contact your GUTH representative.

RELATIVE PERFORMANCE OF THE COMMON ELASTOMERS

Elastomer Type		General Purpose, Non Oil Resistant		General Purpose, Oil Resistant		
		Natural	Styrene Butadiene	Neoprene	Nitrile	Hypalon
	ASTM Designation	NR	SBR	CR	NBR	CSM
	General Temperature Range °C	-50 to +50	-40 to +70	-40 to +120	-40 to +130	-20 to +150
Resistance to:	Abrasion	Excellent	Excellent	Excellent	Good	Excellent
	Compression Set	Good	Good	Good	Good	Fair
	Flame	Poor	Poor	Good	Fair	Good
	Weather	Fair	Fair	Excellent	Fair	Excellent
	Oxidation	Good	Good	Good	Fair	Excellent
	Ozone	Poor	Fair	Excellent	Poor	Excellent
	Radiation	Fair	Good	Fair	Fair	Good
	Water (cold)	Excellent	Excellent	Good	Good	Good
	Steam	Poor	Poor	Fair	Fair	Good
	Gas Permeability	Poor	Fair	Fair	Fair	Good
	Electricity	Excellent	Excellent	Fair	Fair	Good

Elastomer Type		Medium Temp., Non Oil Resistant		High Temp. Oil Resist	Oil Resist	High Temp. Non Oil Resist
		Ethylenepropylene	Butyl	Viton	Polyurethane	Silicone
	ASTM Designation	EP EPDM	IIR	FPM	AU EU	SI
	General Temperature Range °C	-40 to +135	-50 to +120	-15 to +230	-40 to +100	-100 to +250
Resistance to:	Abrasion	Good	Good	Good	Excellent	Poor
	Compression Set	Fair	Fair	Good	Good	Excellent
	Flame	Poor	Poor	Excellent	Poor	Good
	Weather	Excellent	Excellent	Excellent	Excellent	Excellent
	Oxidation	Good	Excellent	Excellent	Excellent	Excellent
	Ozone	Excellent	Excellent	Excellent	Excellent	Excellent
	Radiation	Poor	Poor	Good	Good	Excellent
	Water (cold)	Good	Excellent	Good	Good	Good
	Steam	Good	Fair	Good	Poor	Good
	Gas Permeability	Fair	Good	Good	Good	Good
	Electricity	Excellent	Excellent	Good	Excellent	Excellent

LIGHTING EQUIPMENT MATERIALS – GENERAL GUIDE TO COMPATIBILITY OF ELASTOMER

		NATURAL RUBBER & S.B. RUBBER	NEOPRENE	NITRILE RUBBERS	CHLOROSULPHENATED POLYETHEYLENE	BUTYL RUBBERS	VITON (FLUORO-CARBON ELASTOMER)	SILICONE RUBBERS	POLYURETHANE RUBBERS	FLUORO-SILICONES	PTFE (POLYTETRAFLUORO-ETHYLENE)
GASES	Air or oxygen	A	SH(80°C)	SH	SH(80°C)	C(100°C)	C(200°C)	-70°C to 275°C	SH(80°C)	C(-60°C to 260°C)	C(-150°C to 250°C)
	Halogens	E	E	E	LS	A	C	LS		—	C
	Other gases and dry steam	A	SH(80°C)	SH(80°C)	SH(80°C)	LS(100°C)	C(200°C)	C(150°C)	A(Steam)	C(150°C)	C
INORGANIC LIQUIDS	Water and neutral aqueous solutions	C	C	C	C(80°C)	C	C	C	A (lot)	C	C
	Alkaline solutions	C	C	C	C to LS	C	C	A	A (lot)	SA	C
	Dilute acid solutions	C	C	C	C(80°C)	C	C	A	A (lot)	SA	C
	Strong hydrochloric acid	A	A	A	A	C	C	A	VA	VA	C
	Strong sulphuric acid	VA	A	A	A	A	C	VA	VA	VA	C
	Conc. sulphuric acid	VA	VA	VA	A	LS	C	VA	VA	VA	C
	Nitric acid	VA	VA	VA	A	LS	LS	VA	VA	VA	C
	0.880 ammonia	A	LS	C	SA	C	A	C	VA	SA	C
	Liquid ammonia	A	LS	C	C	C	E	SA	–	SA	C
	Liquid chlorine	VA	VA	VA	LS	E	LS	LS	–	–	C
	Glacial acetic acid	LS	A	C	A	LS	A	SA	VA	–	C
SOLVENTS	Aliphatics	MS	SS	C	MS	MS	C	MS	SS	SS	C
	Aromatics	MS	MS	SS	MS	MS	C	MS	MS	SS	C
	Ketones	SS	MS	SS	MS	SS	MS	MS	MS	MS	C
	Chlorinated	MS	MS	MS	MS	MS	SS	MS	MS	LS	C
	Alcoholic	C	C	C	C	C	C	SS	SS	C	C
	Esters	MS	MS	SS	MS	C	MS	MS	MS	SS	C
FUELS	Ordinary petrols	MS	SS	C	MS	MS	C	MS	C	SS	C
	High octane petrols	MS	MS	SS	MS	MS	C	MS	SS	SS	C
	Kerosene	MS	MS	C	MS	MS	C	MS	C	SS	C
	Gas oil	MS	MS	C	MS	MS	C	MS	C	SS	C
HYDRAULIC FLUIDS	Mineral base	MS	SS	C	SS	MS	C	SS	C	SS	C
	Ester base (non-flam.)	MS	MS	SS	MS	C	MS	SS	SS	SS	C
	Water base	SS	C	C	C	C	C	–	SS	–	C
	Chlorinated type	MS	MS	MS	MS	MS	C	MS	MS	MS	C
	Silicone base	LS	LS	LS	LS	LS	C	SS	LS	SS	C
OILS	Mineral oils	MS	SS	C	SS	MS	C	LS	SS	SS	C
	Synthetic lubricants	MS	MS	SS	MS	SS	LS	LS	SS	SS	C

Note: Temperature figures represent upper limits where given in conjunction with key letters, *eg* SH (80°C) = Slow Hardening above 80°C.

Key:
VA — Vigorously Attacked
A — Attacked
SA — Slight Attack
SH — Slow Hardening
V — Volate
C — Fully Compatible
E — Embrittled
LS — Limited Serviceability
SS — Slight to Moderate Swelling
MS — Marked Swelling