Acrylic Rubbers (ACM)

Classification

Polyacrylic elastomers represent a class of polymeric materials with elevated performances in terms of:

- ✓ resistance to heat, working temperatures up to 175 ºC (peaks up to 200 ºC)
- ✓ high lubricating oil resistance
- ✓ good sealing characteristics, low values of compression set also to high temperatures
- ✓ good ozone resistance
- ✓ good electric characteristics

Polymer type

Polymers available on the market are typical for oil resistance and low temperature performance. Inside these two classes there is a further differentiation according to the "cure-site" present in the polymeric chain. The two principal families are substantially composed from an omopoliymere of the ethyl-butyl acrylate and a copolymer ethyl-acryilate. They are differentiates for low temperature resistance. Such characteristics improve with the addition of special monomers. As for other elastomers, when polyacrylic rubbers improve their low temperature performance there is a worsening of oil resistance.

		Omopolymer	Copolymer	Copolymer Low Temperature
Hardness ShA	Pti	60	60	65
Tensile strength	Mpa	13	11	9
Elongation	%	220	200	180
Compression set 70 H @ 175ºC	%	15	18	20
Heat ageing 70 H @ 175ºC				
Tensile strength	%	-15	-20	-20
Elongation	%	-30	-35	-35
Hardness ShA	Pti	+9	+8	+8
ASTM N.3 70 H @ 150ºC				
Hardness ShA	Pti	-8	-9	-9
Volume	%	+12	+25	+30
Brittle Point	ºC	-15	-25	-35

Applications

Besides the classical molding technologies, seen the innumerable potential applications, these elastomers can be designed for being turned through extrusion or calendaring with LCM vulcanization, hot air or UHF. Other more sophisticated technologies as "roto-cure" or solvent solutions can be used lending particular care to the reological characteristic and "shelf-life" of the compound. The applications mainly concern the auto sector and oil drilling as:

- O-Rings
- motor gaskets
- shaft seals
- Valve cover gaskets
- oil filter gaskets
- pipes
- spark plug boots