

FLUID POWER SEALING SOLUTIONS

MATERIALS MATRIX

POLYMER SEALS

FLUOROPLASTICS

Material Information			
Material code	Material	General Usage	Color
AWC100	Polyimide filled PTFE	Dry running or low viscosity petroleum-based applications. Highest PV value, mechanical toughness and can be used in elevated temperatures with excellent fluid compatibility.	Dark yellow
AWC220	Glass filled modified PTFE	Higher wear resistant properties and lower friction compared to conventional PTFE. Good where cleaner environments are required. Good in more abrasive and high viscous media. Less abrasive on mating surfaces than carbon filled PTFE materials.	Off white
AWC300	Glass + MoS2 filled PTFE	High wear, high pressure and high speed applications. High PV values with excellent fluid compatibility. Excellent in high viscosity fluids.	Dark gray
AWC400	Carbon/graphite filled PTFE	Water and steam applications. High PV values. Excellent all-purpose material for rotary applications. Good electrical conductivity.	Black
AWC440	Carbon/graphite filled modified PTFE	Higher wear resistance in water and steam applications. Good in dry and pneumatic applications. Excellent chemical resistance. Largest pH range, H ₂ S and solvents.	Black
AWC500	40% bronze filled PTFE	Good bearing and extrusion properties. Bronze provides higher thermal conductivity, allowing higher running velocities. Chemical resistance is somewhat lowered because bronze is attacked by some acids and alkalis. Best used in high pressure hydraulic applications.	Light brown
AWC510	Mineral filled PTFE (FDA)	FDA listed material with better wear resistance than unfilled PTFE. Excellent where cleaner environments are required.	White
AWC520	Virgin PTFE (FDA)	Static or slow speed applications with low wear resistance. Works well in vacuum and low gas permeability applications. Superior fluid compatibility.	White
AWC530	EkonoI [®] filled PTFE	Good wear and heat resistant properties. High vacuum service in dynamic conditions for moderate speed and higher pressure applications. High temperature non-aqueous applications.	Cream
AWC550	60% Bronze filled modified PTFE	Higher bearing and extrusion properties with improved wear rates. Good thermal conductivity, allowing higher running velocities with limited chemical resistance in some acids and alkalis. Best suited for higher-pressure hydraulic applications.	Brown

FLUOROPLASTICS (CONTINUED)

Hardness	Tensile Strength	Elongation at break	Temperature	Limitations	Material Code
60 Shore D +/-5	17.3 Mpa (2,500 psi)	200%	-100 to 260°C (-148 to 500°F)	Not recommended with water and steam.	AWC100
62 Shore D +/-5	24.1 Mpa (3,492 psi)	373%	-100 to 260°C (-148 to 500°F)	Can be abrasive against soft mating surfaces.	AWC220
65 Shore D +/-5	18.3 Mpa (2,650 psi)	265%	-100 to 260°C (-148 to 500°F)	Abrasive against soft metal in high pressure dynamic applications.	AWC300
62 Shore D +/-5	17.3 Mpa (2,500 psi)	200%	-100 to 260°C (-148 to 500°F)	Can be abrasive.	AWC400
65 Shore D +/-5	21.3 Mpa (3,087 psi)	296%	-100 to 260°C (-148 to 500°F)	Can be abrasive.	AWC440
62 Shore D +/-5	22.8 Mpa (3,307 psi)	250%	-100 to 260°C (-148 to 500°F)	Limited chemical resistance. Limited speed range.	AWC500
65 Shore D +/-5	19.3 Mpa (2,799 psi)	250%	-100 to 260°C (-148 to 500°F)	Limited wear resistance.	AWC510
62 Shore D +/-5	24.2 Mpa (3,500 psi)	350%	-150 to 232°C (-238 to 450°F)	Poor wear material and creep resistance.	AWC520
62 Shore D +/-5	19.33 Mpa (2,800 psi)	250%	-100 to 260°C (-148 to 500°F)	Limited use with water and steam.	AWC530
65 Shore D +/-5	17.0 Mpa (2,472 psi)	259%	-100 to 260°C (-148 to 500°F)	Limited chemical resistance. Limited speed range.	AWC550

ELASTOMERS

Material Information			
Material code	Description (abbreviation)	General Usage	Color
AWC700	Fluoroelastomer FKM	Best heat resistance and compatibility with aggressive fluids, such as phosphate esters, synthetic hydraulic fluids, many chemicals, and organic solvents. Very good ozone, weather, and aging resistance. Moderate wear and tear resistance.	Black
AWC701	Fluoroelastomer FKM	Best heat resistance and compatibility with aggressive fluid, such as phosphate esters, synthetic hydraulic fluids, many chemicals, and organic solvents. Very good ozone, weather, and aging resistance. Moderate wear and tear resistance.	Brown
AWC715	Fluoroelastomer FKM (FDA)	O-ring material. Best compatibility with aggressive fluids such as phosphate esters, synthetic hydraulic fluids, many chemicals, and organic solvents. Very good ozone, weather, and aging resistance.	Black
AWC727	Fluoroelastomer TFE	Superior heat resistance. Compatible with steam/hot water with a recommended operating range of -10°C to 170°C (14°F to 338°F). Best compatibility with phosphate esters, amines, engine oils, pulp and paper liquors, and high concentrations of acid/alkali/oxidant.	Black
AWC730	Fluoroelastomer FKM	O-ring material. Best heat resistance and compatibility with aggressive fluids, such as phosphate esters, synthetic hydraulic fluids, many chemicals, and organic solvents. Very good ozone, weather, and aging resistance. Moderate wear and tear resistance.	Black
AWC740	acrylonitrile butadiene rubber NBR	O-ring material. Good general purpose elastomer material. Compatible in hydrocarbon-based fluids, alkalis, and acids. Low permanent set and good elasticity.	Black
AWC741	acrylonitrile butadiene rubber NBR (FDA)	Good general purpose elastomer material. Compatible in hydrocarbon-based fluids, alkalis, and acids. Low permanent set and good elasticity.	White
AWC742	acrylonitrile butadiene rubber NBR	Good general purpose elastomer material. Compatible in hydrocarbon-based fluids, alkalis, and acids. Low permanent set and good elasticity. Oil resistant cost competitive material.	Black
AWC750	ethylene propylene diene monomer rubber EPDM	O-ring material. Good general purpose, low temperature elastomer material. Compatible with water, steam, and phosphate ester-based fluids. Excellent UV stability.	Black
AWC800	thermoset polyurethane EU	Excellent wear and tear resistance with low compression set. Compatible with most hydraulic fluids except synthetics. Excellent extrusion resistance at high pressure. Superior performance in hydraulic and pneumatic and slow rotary applications.	Red
AWC805	thermoset polyurethane EU	Good wear and tear resistance and low compression set. Compatible with most hydraulic fluids, except synthetics. Performs well in slightly scored or worn equipment.	Blue
AWC830	thermoset polyurethane EU (FDA approved)	For use in food and pharmaceutical applications where FDA listed material is required.	Off white
AWC860	thermoset polyurethane EU	Higher temperature use. Excellent wear and tear resistance with low compression set. Compatible with most hydraulic fluids except synthetics. Superior performance in hydraulic and pneumatic and slow rotary applications. Excellent extrusion resistance at high pressure.	Cherry

ELASTOMERS (CONTINUED)

Hardness	Tensile strength	Elongation at break	Temperature	Limitations	Material code
88 Shore A	14.57 Mpa (2,110 psi)	134%	-30 to 200°C (-22 to 400°F)	Not resistant to water, steam, glycols, ketones, and fluids with amines.	AWC700
85 Shore A	>10.0 Mpa (1,450 psi)	>200%	-30 to 200°C (-22 to 400°F)	Not resistant to water, steam, glycols, ketones, and fluids with amine.	AWC701
75 Shore A	16.6 Mpa (2,408 psi)	311%	-30 to 200°C (-22 to 400°F)	Not resistant to water, steam, glycols, ketones, and fluids with amine.	AWC715
85 Shore A	7.2 Mpa (1,040 psi)	236%	-10 to 220°C (14 to 428°F)	Not chemically resistant to glycols, ketones and fluids with amine.	AWC727
75 Shore A	13.76 Mpa (1,996 psi)	200%	-30 to 200°C (-22 to 400°F)	Not resistant to water, steam, glycols, ketones, and fluids with amine.	AWC730
70 Shore A	17.1 Mpa (2,476 psi)	385%	-30 to 121°C (-22 to 250°F)	Not chemically resistant to phosphate ester fluids, strong acids, and automotive brake fluids.	AWC740
85 Shore A	15.0 Mpa (2,175 psi)	100%	-35 to 100°C (-31 to 200°F)	Not chemically resistant to phosphate ester fluids, strong acids, and brake fluids.	AWC741
85 Shore A	17.0 Mpa (2,460 psi)	100%	-35 to 100°C (-31 to 212°F)	Not chemically resistant to phosphate ester fluids, strong acids and brake fluids.	AWC742
85 Shore A	13.9 Mpa (2,022 psi)	130%	-55 to 150°C (-67 to 302°F)	Not chemically resistant to mineral oil products.	AWC750
95 Shore A	34.5 Mpa (5,000 psi)	400%	-50 to 85°C (-58 to 185°F)	Not chemically resistant to hot water/steam and strong acids and alkalis.	AWC800
85 Shore A	30.4 Mpa (4,400 psi)	580%	-50 to 85°C (-58 to 185°F)	Not chemically resistant to hot water/steam and strong acids and alkalis.	AWC805
90 Shore A	53.86 Mpa (7,800 psi)	430%	-35 to 75°C (-31 to 167°F)	Not chemically resistant to hot water/steam and strong acids and alkalis.	AWC830
95 Shore A	42.6 Mpa (6,180 psi)	540%	-50 to 120°C (-58 to 248°F)	Not chemically resistant to hot water/steam and strong acids and alkalis.	AWC860

ENGINEERED PLASTICS

Material Information			
Material code	Description (abbreviation)	General Usage	Color
AWC600	Polyester TPE	Applications requiring strong resistance to tear, creep, and abrasion. Some elastic characteristics. Good against rougher surface finishes.	Black
AWC610	Unfilled ultra high molecular weight polyethylene UHMWPE (FDA)	Highly abrasion resistant in reciprocating or slow rotary applications. Excellent in water-based fluids. Economical and excellent in cryogenic applications.	White translucent
AWC615	High Temp ultra high molecular weight polyethylene UHMWPE (FDA)	Wear and abrasion resistance properties. Good in dry applications. Excellent chemical resistance. Large pH range and solvents. Excellent in cryogenic applications. Good upper temperature limit.	White translucent
AWC620	Premium iron oxide filled ultra high molecular weight polyethylene UHMWPE	Better wear and abrasion resistant properties than unfilled UHMWPE. Reciprocating or slow rotary applications. Excellent in water-based fluids.	White translucent
AWC625	Glass filled ultra high molecular weight polyethylene UHMWPE	Abrasive, high wear, reciprocating or slow rotary applications. Excellent in water-based fluids but chemical compatibility and upper temperatures are limited.	Yellow translucent
AWC630	Unfilled polyetheretherketone PEEK	Better wear characteristics. Tough, reliable and dimensionally stable, even under continuous elevated temperatures. Excellent wear characteristics for seals and bearings. Compressive strength 124 Mpa (18,000 psi).	Tan
AWC635	Glass filled polyetheretherketone PEEK	Designed for improving the wear rate of unfilled PEEK (AWC630) in high performance applications. Tough, reliable and dimensionally stable, even under continuous elevated temperatures. Good back up ring material in back up ring applications.	Tan
AWC650	Polyoxymethylene (Acetal) POM (FDA)	Anti-extrusion rings or medium load-bearing applications. Excellent creep resistance under continuous load, fatigue and endurance under repeated cycles. Compressive strength 55.2 Mpa (8,000 psi).	White or black
AWC660	Polyamide (Glass filled Nylon)	Excellent wear characteristics and load-bearing capability. Low fluid absorption and low friction. Compressive strength 158.8 Mpa (23,000 psi).	Black
AWC663	Polyamide Nylon	Good general purpose polyamide material. Bearing material. Compressive strength 90-100 Mpa (13,050-14,500 psi).	Off white
AWC665	Polyamide with MoS2 Nylon	Better wear properties with MoS2 than unfilled material. Bearing material. Compressive strength 100-110 Mpa (14,500-15,950 psi).	Black

ENGINEERED PLASTICS (CONTINUED)

Hardness	Tensile strength	Elongation at break	Temperature	Limitations	Material code
55 Shore D +/-5	40.0 Mpa (4,802 psi)	500%	-40 to 110°C (-40 to 230)°F	Limited temperature range.	AWC600
64 Shore D +/-5	38.7-48.33 Mpa (5,600-7,000 psi)	350-526%	-200 to 82°C (-325 to 180)°F	Limited temperature and speed range.	AWC610
64 Shore D +/-5	48.3 Mpa (7,000 psi)	242%	-200 to 110°C (-325 to 230)°F	Limited size availability.	AWC615
64 Shore D +/-5	37.98 Mpa (5,500 psi)	300%	-200 to 82°C (-325 to 180)°F	Limited temperature and speed range.	AWC620
64 Shore D +/-5	34.52 Mpa (5,000 psi)	250%	-200 to 82°C (-325 to 180)°F	Limited temperature and speed range.	AWC625
126 Rockwell R +/-5	70.4-103.6 Mpa (10,200-15,000 psi)	5%	-73 to 249°C (-100 to 480)°F	Limited speed range.	AWC630
124 Rockwell R +/-5	155.8 Mpa (22,600 psi)	2%	-50 to 249°C (-60 to 480)°F	Limited speed range.	AWC635
116 Rockwell R +/-5	69 Mpa (10,000 psi)	30%	-40 to 90°C (-40 to 200)°F	Limited chemical resistance and temperature range.	AWC650
85 Shore D +/-5	172.6 Mpa (25,000 psi)	3%	-40 to 110°C (-40 to 230)°F	Limited chemical resistance and temperature range.	AWC660
84 Shore D +/-5	75-85 Mpa (10,875-12,325 psi)	>25%	-40 to 110°C (-40 to 230)°F	Limited chemical resistance and temperature range. Higher fluid absorption.	AWC663
84 Shore D +/-5	80-90 Mpa (11,600-13,050 psi)	>20%	-40 to 110°C (-40 to 230)°F	Higher fluid absorption.	AWC665



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