

DALCON PHYSICAL PROPERTIES (Typical)

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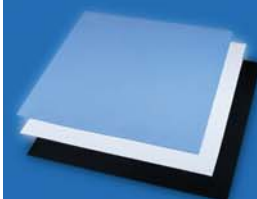
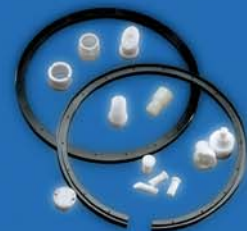
Dalau Limited,
Ford Road,
Clacton on Sea,
Essex CO15 3DZ
Tel: +44 (0) 1255 220220
Fax: +44 (0) 1255 221122

Email: sales@dalau.com
www.dalau.com

DALCON 001

Issued 25/09/97		PHYSICAL PROPERTIES (Typical)			Page 1 of 2
Ingredients: 100% Virgin P.T.F.E. Filler/Pigment: None Colour: Natural (White)					
MECHANICAL PROPERTIES		Value	Units	Standard	
Tensile Strength	(Moulding Direction)	15 - 35	MPa	BS2782:Pt3	
Elongation at Break	(Moulding Direction)	150 - 350	%	BS2782:Pt3	
Density		2.13 - 2.19	g/cc	BS2782:Pt6	
Hardness		57 - 64	Shore D	ASTM D2240	
Haze		80 - 85	%	ASTM D1003	
Deformation under Load	@ 1Hr, 23°C, 14.2MPa	11.8	%	ASTM D621	
	@ 24Hrs, 23°C, 14.2MPa	14.3	%		
	@ Permanent Deformation	7.9	%		
	@ 1Hr, 150°C, 5MPa	10.0	%		
Compressive Modulus	@ 0.2% Offset, 23°C	600 - 700	MPa	ASTM D621	
Flexural Yield Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D790	
Flexural Modulus	@ 23°C	690	MPa	ASTM D790	
Compressive Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D695	
	@ 0.2% Offset, 150°C	-	MPa		
ELECTRICAL PROPERTIES		Value	Units	Standard	
Dielectric Strength	@ Air (Tape)	60 - 80	KV/mm	ASTM D149	
	@ Oil (Extrusion/Moulding)	35/24	KV/mm		
Proof Test	(Dielectric Strength)	24 (Pass)	KV/mm	BS6564 (E)	
Dielectric Constant	@ 60 Hz	2.1	-	ASTM D150	
	@ 10 ⁶ Hz	2.1	-		
Dissipation Factor	@ 60 Hz	<0.0003	-	ASTM D150	
	@ 10 ⁶ Hz	<0.0003	-		
Resistivity	@ Surface	10 ¹⁷	Ω	ASTM D257	
	@ Volume	10 ¹⁸	Ω cm		
THERMAL PROPERTIES		Value	Units	Standard	
Point of Fusion DSC		327	°C	ASTM D3417	
Max. Working Temperature		260	°C	-	
Max. Working Temperature	@ Short Periods	300	°C	-	
Min. Working Temperature		-200	°C	-	
Thermal Conductivity	@ Moulding Direction (MD)	0.24	W/(m.K)	ASTM C177	
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD)	142	10 ⁻⁶ /°C	ASTM D696	
	@ Right Angles to MD	152	10 ⁻⁶ /°C		
Flammability		None	-	UL94V(0)	
Flash Point		530	°C	ASTM D1929	
Limiting Oxygen Index		>95	%	ASTM D2863	
WEAR PROPERTIES		Value	Units	Standard	
Coefficient of Friction	@ Dry sliding Static	0.08	-	ASTM D1894	
	Dynamic	0.06	-		

The above properties are typical and are only intended to be used as a guide



DALCON 001

Issued 25/09/97

PHYSICAL PROPERTIES (Typical)

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Ingredients: 100% Virgin P.T.F.E.
 Filler/Pigment: None
 Colour: White (Natural)

CHEMICAL RESISTANCE

The strength of the carbon - fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, and some fluorine compounds at elevated temperatures.

Some Fluorinated Hydrocarbons (refrigerants) cause reversible swelling i.e. Tetrafluorodichloroethane Frigen 21, giving a 9.6% weight increase.

For specific data on chemical resistance of this material we have a computer database with all the information covering over 90% of all known chemicals.

APPLICATIONS & INDUSTRIES

General:

The static and dynamic friction coefficient are numerically equal, consequently no 'Stick Slip' occurs.

Chemical:

Dynamic & shaft seals.
 Pipes & tubing for carrying chemicals.
 Seals & gaskets. Flat gaskets are used to seal flanges in pipelines.

Construction:

Bridge bearings. Slide bearings.

Electrical:

Communications, radio & television engineering, cable insulation.
 Electrical plant construction & electronics industry (connectors & terminals).
 General electrical equipment (P.T.F.E. excellent electrical insulating material).
 Power plant installations (switchgear).

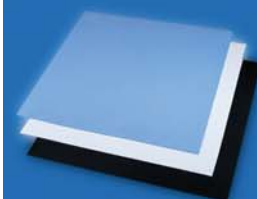
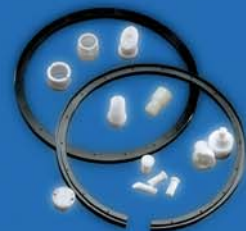
Engineering:

Anti - friction bearing cages & bearing plates.
 Bearings and bushes.
 Diaphragm pumps. Film bearings. Multi - layer composite bearings. Fabric bearings.
 Laboratory equipment. Measuring & control technology.
 Pipe supports. Expansion bellows. Glandless valves & pumps, valve seats.
 Piston rings in hydraulic systems.
 Piston rod packings used in compressor plunger pumps & valves.

Food:

Dynamic & shaft seals (used in the food processing industry).
 Linings & coatings (fertiliser plant & food industry line equipment).

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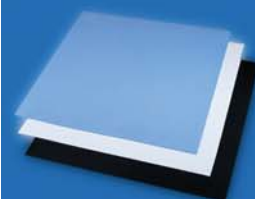
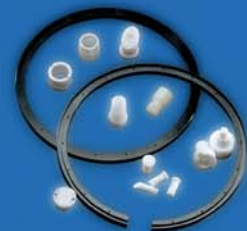
Dalau Limited,
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 Clacton on Sea,
 Essex CO15 3DZ
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DALCON 006

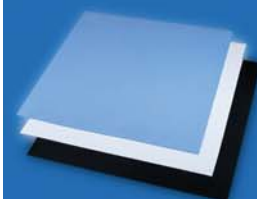
Issued 25/09/97		PHYSICAL PROPERTIES (Typical)			Page 1 of 2
Ingredients: 75% Virgin P.T.F.E. Filler/Pigment: 25% Glass Fibre (by weight) Colour: Off White					
MECHANICAL PROPERTIES		Value	Units	Standard	
Tensile Strength	(Moulding Direction)	11 - 15	MPa	BS2782:Pt3	
Elongation at Break	(Moulding Direction)	120 - 270	%	BS2782:Pt3	
Density		2.19 - 2.27	g/cc	BS2782:Pt6	
Hardness		64 - 68	Shore D	ASTM D2240	
Deformation under Load	@ 1Hr, 23°C, 14.2MPa	9.0	%	ASTM D621	
	@ 24Hrs, 23°C, 14.2MPa	12.4	%		
	@ Permanent Deformation	6.4	%		
	@ 1Hr, 150°C, 5MPa	9.2	%		
Flexural Yield Strength	@ 0.2% Offset, 23°C	5.5	%	ASTM D790	
Flexural Modulus	@ 23°C	1000	MPa	ASTM D790	
Compressive Strength	@ 0.2% Offset, 23°C	7.2	MPa	ASTM D695	
	@ 0.2% Offset, 150°C	1.8	MPa		
ELECTRICAL PROPERTIES		Value	Units	Standard	
Dielectric Strength	@ Air	12.9	KV/mm	ASTM D149	
	@ Oil	34.2	KV/mm		
Proof Test	(Dielectric Strength)	-	KV/mm	BS6564 (E)	
Dielectric Constant	@ 60 Hz	2.63	-	ASTM D150	
	@ 10 ⁶ Hz	2.85	-		
Dissipation Factor	@ 60 Hz	0.0718	-	ASTM D150	
	@ 10 ⁶ Hz	0.0028	-		
Resistivity	@ Surface	>10 ¹⁶	Ω	ASTM D257	
	@ Volume	>10 ¹⁷	Ω cm		
THERMAL PROPERTIES		Value	Units	Standard	
Point of Fusion DSC		327	°C	ASTM D3417	
Max. Working Temperature		260	°C	-	
Max. Working Temperature @ Short Periods		300	°C	-	
Min. Working Temperature		-200	°C	-	
Thermal Conductivity	@ Moulding Direction (MD)	0.41	W/(m.K)	ASTM C177	
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD)	136	10 ⁻⁶ /°C	ASTM D696	
	@ Right Angles to MD	84	10 ⁻⁶ /°C		
Flammability		-	-	UL94V(0)	
Flash Point		630	°C	ASTM D1929	
Limiting Oxygen Index		98 - 100	%	ASTM D2863	
WEAR PROPERTIES		Value	Units	Standard	
Coefficient of Friction	@ Dry Sliding			ASTM D1894	
	Static	-	-		
	Dynamic	-	-		

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DALCON 006

Issued 25/09/97	PHYSICAL PROPERTIES (Typical)	Page 2 of 2
Ingredients: 75% Virgin P.T.F.E. Filler/Pigment: 25% Glass Fibre (by weight) Colour: Off White		
CHEMICAL RESISTANCE		
<p>The strength of the carbon - fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, and some fluorine compounds at elevated temperatures. Resistant to organic solvents.</p> <p>This compound has a fair resistance to the following chemicals:</p> <p>Ammonium hydroxide, Bromine, Chromic acid, Hydroboric acid, Hydrochloric acid, Hydrocyanic acid, Nitric acid (0 - 50%), Phenol, Sodium hydroxide.</p> <p>This compound has an unsatisfactory resistance to the following chemicals:</p> <p>Fluorosilicic acid, Hydrofluoric acid, Hydrogen sulphide (solution), Sodium silicate.</p>		
APPLICATIONS & INDUSTRIES		
<p>General:</p> <p>25% Glass fibre is the most widely used filler. It improves the creep resistance, compressive strength, rigidity, and wear of PTFE, both at low & high temperatures. It is chemically stable (except to strong alkalis & hydrochloric acid - HF). 25% glass filler improves the wear resistance properties of PTFE.</p> <p>Chemical:</p> <p>Dynamic & shaft seals. Seals & gaskets. Flat gaskets are used to seal flanges in pipelines.</p> <p>Construction:</p> <p>Bridge bearings. Slide bearings.</p> <p>Electrical:</p> <p>None.</p> <p>Engineering:</p> <p>Anti - friction bearing cages & bearing plates. Bearings, bushes, shaft bearings / seals (in combustion engines). Chain tension slide bearings. Film bearings. Multi - layer composite bearings. Laboratory equipment. Measuring & control technology. Pipe supports. Glandless valves & pumps, valve seats. Piston rings in hydraulic systems. Piston rod packings used in compressor plunger pumps & valves.</p> <p>Food:</p> <p>None.</p>		
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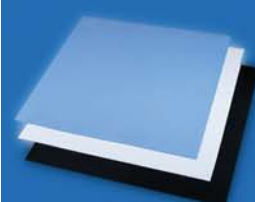
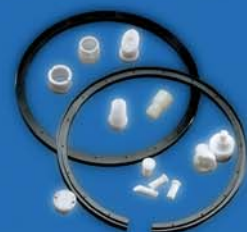
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DALCON 018

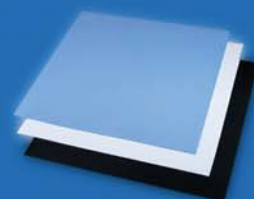
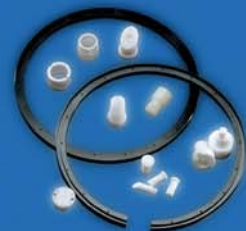
Issued 25/09/97		PHYSICAL PROPERTIES (Typical)			Page 1 of 2
Ingredients: 85% Virgin P.T.F.E. Filler/Pigment: 15% Graphite (by weight) Colour: Dark Grey					
MECHANICAL PROPERTIES		Value	Units	Standard	
Tensile Strength	(Moulding Direction)	13.5 - 25	MPa	BS2782:Pt3	
Elongation at Break	(Moulding Direction)	120 - 250	%	BS2782:Pt3	
Density		2.10 - 2.18	g/cc	BS2782:Pt6	
Hardness		65 - 67	Shore D	ASTM D2240	
Deformation under Load	@ 1Hr, 23°C, 14.2MPa	-	%	ASTM D621	
	@ 24Hrs, 23°C, 14.2MPa	-	%		
	@ Permanent Deformation	-	%		
	@ 1Hr, 150°C, 5MPa	-	%		
Flexural Yield Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D790	
Flexural Modulus	@ 23°C	-	MPa	ASTM D790	
Compressive Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D695	
	@ 0.2% Offset, 150°C	-	MPa		
ELECTRICAL PROPERTIES		Value	Units	Standard	
Dielectric Strength	@ Air	-	KV/mm	ASTM D149	
	@ Oil	-	KV/mm		
Proof Test	(Dielectric Strength)	-	KV/mm	BS6564 (E)	
Dielectric Constant	@ 60 Hz	-	-	ASTM D150	
	@ 10 ⁶ Hz	-	-		
Dissipation Factor	@ 60 Hz	-	-	ASTM D150	
	@ 10 ⁶ Hz	-	-		
Resistivity	@ Surface	10 ¹²	Ω	ASTM D257	
	@ Volume	10 ¹¹	Ω cm		
THERMAL PROPERTIES		Value	Units	Standard	
Point of Fusion DSC		327	°C	ASTM D3417	
Max. Working Temperature		260	°C	-	
Max. Working Temperature	@ Short Periods	300	°C	-	
Min. Working Temperature		-200	°C	-	
Thermal Conductivity	@ Moulding Direction (MD)	0.78	W/(m.K)	ASTM C177	
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD)	-	10 ⁻⁶ /°C	ASTM D696	
	@ Right Angles to MD	-	10 ⁻⁶ /°C		
Flammability		-	-	UL94V(0)	
Flash Point		630	°C	ASTM D1929	
Limiting Oxygen Index		-	%	ASTM D2863	
WEAR PROPERTIES		Value	Units	Standard	
Coefficient of Friction	@ Dry Sliding	-	-	ASTM D1894	
	Static	-	-		
	Dynamic	-	-		

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DALCON 018

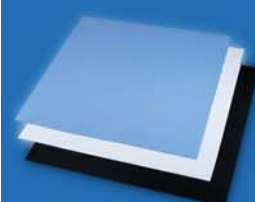
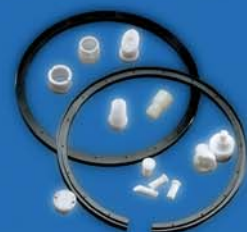
Issued 25/09/97	PHYSICAL PROPERTIES (Typical)	Page 2 of 2
Ingredients: 85% Virgin P.T.F.E. Filler/Pigment: 15% Graphite (by weight) Colour: Dark Grey		
CHEMICAL RESISTANCE		
The strength of the carbon - fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, some fluorine compounds & halogen gases at elevated temperatures.		
APPLICATIONS & INDUSTRIES		
General: Graphite filler improves the sliding properties & thermal conductivity of PTFE and has one of the lowest coefficient of frictions. It has low wear in water and is a good bearing material on soft metals & in high speed contact.		
Chemical: Dynamic & shaft seals. Construction: Bridge bearings. Slide bearings.		
Electrical: None.		
Engineering: Anti - friction bearing cages & bearing plates. Bearings, bushes, shaft bearings / seals (in combustion engines). Film bearings. Multi - layer composite bearings. Fabric bearings. Laboratory equipment. Measuring & control technology. Pipe supports. Expansion bellows. Glandless valves & pumps, valve seats. Piston rings in hydraulic systems. Piston rod packings used in compressor plunger pumps & valves.		
Food: None.		
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DALCON 020

Issued 25/09/97		PHYSICAL PROPERTIES (Typical)			Page 1 of 2
Ingredients: Virgin P.T.F.E. Filler/Pigment: Carbon (Anti-Static) Colour: Black					
MECHANICAL PROPERTIES		Value	Units	Standard	
Tensile Strength	(Moulding Direction)	20 - 35	MPa	BS2782:Pt3	
Elongation at Break	(Moulding Direction)	150 - 350	%	BS2782:Pt3	
Density		2.13 - 2.19	g/cc	BS2782:Pt6	
Hardness		57 - 64	Shore D	ASTM D2240	
Deformation under Load	@ 1Hr, 23°C, 14.2MPa @ 24Hrs, 23°C, 14.2MPa @ Permanent Deformation @ 1Hr, 150°C, 5MPa	Similar to Dalcon 001	% % % %	ASTM D621	
Flexural Yield Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D790	
Flexural Modulus	@ 23°C	Dalcon 001	MPa	ASTM D790	
Compressive Strength	@ 0.2% Offset, 23°C @ 0.2% Offset, 150°C	- -	MPa MPa	ASTM D695	
ELECTRICAL PROPERTIES		Value	Units	Standard	
Dielectric Strength	@ Air (Tape) @ Oil (Extrusion/Moulding)	- -	KV/mm KV/mm	ASTM D149	
Proof Test	(Dielectric Strength)	-	KV/mm	BS6564 (E)	
Dielectric Constant	@ 60 Hz @ 10 ⁶ Hz	- -	- -	ASTM D150	
Dissipation Factor	@ 60 Hz @ 10 ⁶ Hz	- -	- -	ASTM D150	
Resistivity	@ Surface @ Volume	- -	Ω Ω cm	ASTM D257	
Conductivity:					
Electrical Resistance	per 50mm	0 - 50	K Ω		
Electrical Conductivity	per 25.4 x 254mm	0 - 40	M Ω		
THERMAL PROPERTIES		Value	Units	Standard	
Point of Fusion DSC		327	°C	ASTM D3417	
Max. Working Temperature		260	°C	-	
Max. Working Temperature	@ Short Periods	300	°C	-	
Min. Working Temperature		-200	°C	-	
Thermal Conductivity	@ Moulding Direction (MD)	0.24	W/(m.K)	ASTM C177	
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD) @ Right Angles to MD	142 152	10 ⁻⁶ /°C 10 ⁻⁶ /°C	ASTM D696	
Flammability		-	-	UL94V(0)	
Flash Point		530	°C	ASTM D1929	
Limiting Oxygen Index		>95	%	ASTM D2863	
WEAR PROPERTIES		Value	Units	Standard	
Coefficient of Friction	@ Dry Sliding Static Dynamic	0.08 0.06	- -	ASTM D1894	

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Essex CO15 3DZ
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www.dalau.com

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PHYSICAL PROPERTIES (Typical)

Page 2 of 2

Ingredients: Virgin P.T.F.E.
Filler/Pigment: Carbon (Anti-Static)
Colour: Black

CHEMICAL RESISTANCE

The strength of the carbon - fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, and some fluorine compounds at elevated temperatures.

Some Fluorinated Hydrocarbons (refrigerants) cause reversible swelling i.e. Tetrafluorodichloroethane Frigen 21, giving a 9.6% weight increase.

For specific data on chemical resistance of this material we have a computer database with all the information covering over 90% of all known chemicals.

APPLICATIONS & INDUSTRIES

General:

The static and dynamic friction coefficient are numerically equal, consequently no 'Stick Slip' occurs.

Chemical:

None.

Construction:

None.

Electrical:

Ideal for Anti - Static Applications.
Anti - Static Hose Linings.
Anti - Static Diaphragms.

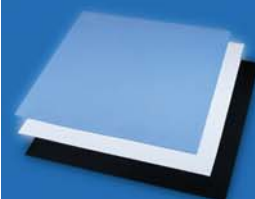
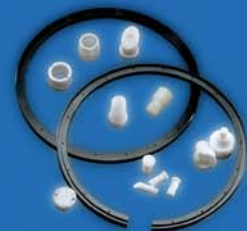
Engineering:

None.

Food:

None.

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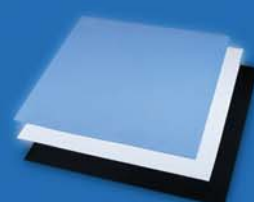
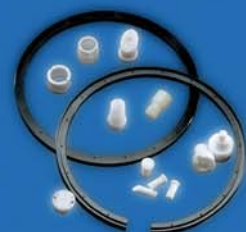
Dalau UK

Dalau Limited,
Ford Road,
Clacton on Sea,
Essex CO15 3DZ
Tel: +44 (0) 1255 220220
Fax: +44 (0) 1255 221122

Email: sales@dalau.com
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DALCON 021

Issued 25/09/97		PHYSICAL PROPERTIES (Typical)			Page 1 of 2
Ingredients: 75% Virgin P.T.F.E. Filler/Pigment: 25% Carbon Coke(by weight) Colour: Black					
MECHANICAL PROPERTIES		Value	Units	Standard	
Tensile Strength	(Moulding Direction)	12 - 25	MPa	BS2782:Pt3	
Elongation at Break	(Moulding Direction)	50 - 250	%	BS2782:Pt3	
Density		2.05 - 2.13	g/cc	BS2782:Pt6	
Hardness		70 - 72	Shore D	ASTM D2240	
Deformation under Load	@ 1Hr, 23°C, 14.2MPa	4.8	%	ASTM D621	
	@ 24Hrs, 23°C, 14.2MPa	6.6	%		
	@ Permanent Deformation	-	%		
	@ 1Hr, 150°C, 5MPa	6.6	%		
Flexural Yield Strength	@ 0.2% Offset, 23°C	10.3	MPa	ASTM D790	
Flexural Modulus	@ 23°C	1090	MPa	ASTM D790	
Compressive Strength	@ 0.2% Offset, 23°C	9.16	MPa	ASTM D695	
	@ 0.2% Offset, 150°C	2.3	MPa		
ELECTRICAL PROPERTIES		Value	Units	Standard	
Dielectric Strength	@ Air	-	KV/mm	ASTM D149	
	@ Oil	-	KV/mm		
Proof Test	(Dielectric Strength)	-	KV/mm	BS6564 (E)	
Dielectric Constant	@ 60 Hz	-	-	ASTM D150	
	@ 10 ⁶ Hz	-	-		
Dissipation Factor	@ 60 Hz	-	-	ASTM D150	
	@ 10 ⁶ Hz	-	-		
Resistivity	@ Surface	-	Ω	ASTM D257	
	@ Volume	-	Ω cm		
THERMAL PROPERTIES		Value	Units	Standard	
Point of Fusion DSC		327	°C	ASTM D3417	
Max. Working Temperature		260	°C	-	
Max. Working Temperature	@ Short Periods	300	°C	-	
Min. Working Temperature		-200	°C	-	
Thermal Conductivity	@ Moulding Direction (MD)	0.58	W/(m.K)	ASTM C177	
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD)	-	10 ⁻⁶ /°C	ASTM D696	
	@ Right Angles to MD	-	10 ⁻⁶ /°C		
Flammability		-	-	UL94V(0)	
Flash Point		630	°C	ASTM D1929	
Limiting Oxygen Index		98 - 100	%	ASTM D2863	
WEAR PROPERTIES		Value	Units	Standard	
Coefficient of Friction	@ Dry Sliding	-	-	ASTM D1894	
	Static	-	-		
	Dynamic	-	-		
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DALCON 021

Issued 25/09/97

PHYSICAL PROPERTIES (Typical)

Page 2 of 2

Ingredients: 75% Virgin P.T.F.E.
 Filler/Pigment: 25% Carbon Coke (by weight)
 Colour: Black

CHEMICAL RESISTANCE

The strength of the carbon - fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, some fluorine compounds & halogen gases at elevated temperatures.

Carbon / Coke is a good inert filler, except in oxidising environments where glass performs better. Resistant to hydrofluoric acid.

APPLICATIONS & INDUSTRIES

General:

Carbon / Coke (soft) filler is good in dry running conditions, adds to the creep resistance, increases the hardness and raises the thermal conductivity of PTFE.

Carbon / Coke (soft) compounds have good wear properties, but has low tool wear during machining, thus allowing machining to very close tolerances.

Carbon / Coke (soft) compounds have some electrical conductivity and are therefore antistatic.

Carbon filled compounds when combined with graphite, have excellent wear properties. The combination of the above properties makes carbon / graphite compounds the preferred material for non - lubricated piston rings.

Chemical:

Dynamic & shaft seals.

Seals & gaskets. Flat gaskets are used to seal flanges in pipelines.

Construction:

Bridge bearings. Slide bearings.

Electrical:

None.

Engineering:

Anti - friction bearing cages & bearing plates.

Bearings, bushes, shaft bearings / seals (in combustion engines).

Film bearings. Multi - layer composite bearings. Fabric bearings.

Laboratory equipment. Measuring & control technology.

Pipe supports. Expansion bellows. Glandless valves & pumps, valve seats.

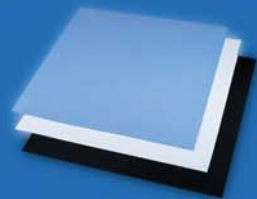
Piston rings in hydraulic systems and compressors.

Piston rod packings used in compressor plunger pumps & valves.

Food:

None.

The above properties are typical and are only intended to be used as a guide



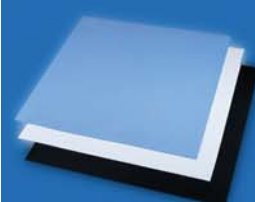
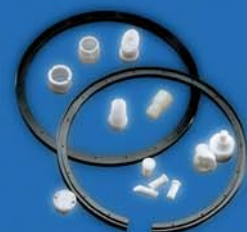
Dalau UK

Dalau Limited,
 Ford Road,
 Clacton on Sea,
 Essex CO15 3DZ
 Tel: +44 (0) 1255 220220
 Fax: +44 (0) 1255 221122

Email: sales@dalau.com
 www.dalau.com

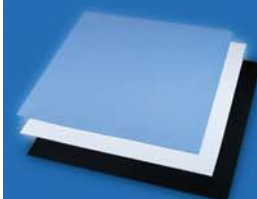
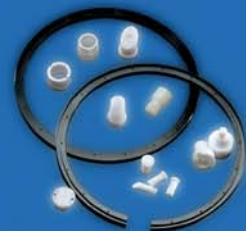
DALCON 025

Issued 25/09/97		PHYSICAL PROPERTIES (Typical)			Page 1 of 2
Ingredients: 75% Virgin P.T.F.E. Filler/Pigment: 25% Glass Fibre, Blue (by weight) Colour: Blue					
MECHANICAL PROPERTIES		Value	Units	Standard	
Tensile Strength	(Moulding Direction)	11 - 15	MPa	BS2782:Pt3	
Elongation at Break	(Moulding Direction)	120 - 270	%	BS2782:Pt3	
Density		2.19 - 2.27	g/cc	BS2782:Pt6	
Hardness		64 - 68	Shore D	ASTM D2240	
Deformation under Load	@ 1Hr, 23°C, 14.2MPa	9.0	%	ASTM D621	
	@ 24Hrs, 23°C, 14.2MPa	12.4	%		
	@ Permanent Deformation	6.4	%		
	@ 1Hr, 150°C, 5MPa	9.2	%		
Flexural Yield Strength	@ 0.2% Offset, 23°C	5.5	MPa	ASTM D790	
Flexural Modulus	@ 23°C	1000	MPa	ASTM D790	
Compressive Strength	@ 0.2% Offset, 23°C	8.64	MPa	ASTM D695	
	@ 0.2% Offset, 150°C	1.8	MPa		
Gasket Constants	@ 23°C (1.5mm Thick)				
	G _b	13.97	MPa	Proposed	
	a	0.157	-	ASTM Draft	
	G _s	1.04	MPa	N°9	
Gasket Constants obtained from ROTT test procedure documented in the proposed ASTM Draft N°9 of the "Standard Test Method for Gasket Constants for Bolted Joint Design"					
ELECTRICAL PROPERTIES		Value	Units	Standard	
Dielectric Strength	@ Air	12.9	KV/mm	ASTM D149	
	@ Oil	34.2	KV/mm		
Proof Test	(Dielectric Strength)	-	KV/mm	BS6564 (E)	
Dielectric Constant	@ 60 Hz	2.63	-	ASTM D150	
	@ 10 ⁶ Hz	2.85	-		
Dissipation Factor	@ 60 Hz	0.0718	-	ASTM D150	
	@ 10 ⁶ Hz	0.0028	-		
Resistivity	@ Surface	10 ¹⁶	Ω	ASTM D257	
	@ Volume	10 ¹⁷	Ω cm		
THERMAL PROPERTIES		Value	Units	Standard	
Point of Fusion DSC		327	°C	ASTM D3417	
Max. Working Temperature		260	°C	-	
Max. Working Temperature	@ Short Periods	300	°C	-	
Min. Working Temperature		-200	°C	-	
Thermal Conductivity	@ Moulding Direction (MD)	0.41	W/(m.K)	ASTM C177	
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD)	136	10 ⁻⁶ /°C	ASTM D696	
	@ Right Angles to MD	84	10 ⁻⁶ /°C		
Flammability		-	-	UL94V(0)	
Flash Point		630	°C	ASTM D1929	
Limiting Oxygen Index		98 - 100	%	ASTM D2863	
WEAR PROPERTIES		Value	Units	Standard	
Coefficient of Friction	@ Dry Sliding				
	Static	-	-	ASTM D1894	
	Dynamic	-	-		
The above properties are typical and are only intended to be used as a guide					



DALCON 025

<i>Issued 25/09/97</i>	PHYSICAL PROPERTIES (Typical)	Page 2 of 2
Ingredients: 75% Virgin P.T.F.E. Filler/Pigment: 25% Glass Fibre, Blue (by weight) Colour: Blue		
CHEMICAL RESISTANCE		
<p>The strength of the carbon - fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, and some fluorine compounds at elevated temperatures. Resistant to organic solvents.</p> <p>This compound has a fair resistance to the following chemicals:</p> <p>Ammonium hydroxide, Bromine, Chromic acid, Hydroboric acid, Hydrochloric acid, Hydrocyanic acid, Nitric acid (0 - 50%), Phenol, Sodium hydroxide.</p> <p>This compound has an unsatisfactory resistance to the following chemicals:</p> <p>Fluorosilicic acid, Hydrofluoric acid, Hydrogen sulphide (solution), Sodium silicate.</p>		
APPLICATIONS & INDUSTRIES		
General:		
<p>25% Glass fibre is the most widely used filler. It improves the creep resistance, compressive strength, rigidity, and wear of PTFE, both at low & high temperatures. It is chemically stable (except to strong alkalis & hydrochloric acid - HF). 25% glass filler improves the wear resistance properties of PTFE.</p>		
Chemical:		
<p>Dynamic & shaft seals. Seals & gaskets. Flat gaskets are used to seal flanges in pipelines.</p>		
Construction:		
<p>Bridge bearings. Slide bearings.</p>		
Electrical:		
<p>None.</p>		
Engineering:		
<p>Anti - friction bearing cages & bearing plates. Bearings, bushes, shaft bearings / seals (in combustion engines). Chain tension slide bearings. Film bearings. Multi - layer composite bearings. Laboratory equipment. Measuring & control technology. Pipe supports. Glandless valves & pumps, valve seats. Piston rings in hydraulic systems. Piston rod packings used in compressor plunger pumps & valves.</p>		
Food:		
<p>None.</p>		
<p>The above properties are typical and are only intended to be used as a guide</p>		



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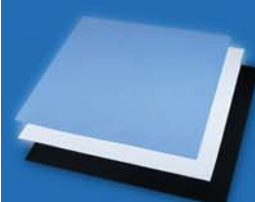
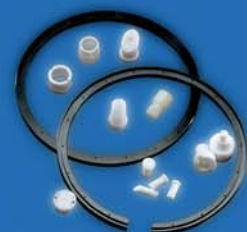
Dalau Limited,
 Ford Road,
 Clacton on Sea,
 Essex CO15 3DZ
Tel: +44 (0) 1255 220220
Fax: +44 (0) 1255 221122

Email: sales@dalau.com
www.dalau.com

DALCON 086

Issued 25/09/97		Page 1 of 2		
PHYSICAL PROPERTIES (Typical)				
Ingredients: 100% Virgin P.T.F.E. Modified Polymer Filler/Pigment: None Colour: White (Natural)				
MECHANICAL PROPERTIES		Value	Units	Standard
Tensile Strength	(Moulding Direction)	25 - 35	MPa	BS2782:Pt3
Elongation at Break	(Moulding Direction)	345 - 505	%	BS2782:Pt3
Density		2.15 - 2.19	g/cc	BS2782:Pt6
Hardness		57 - 64	Shore D	ASTM D2240
Haze	0.125mm Thick	60 - 75	%	ASTM D1003
Light Transformation	0.125mm Thick	90 - 94	%	ASTM D791
Deformation under Load	@ 24Hrs, 23°C, 13.7MPa	4.5 - 6.5	%	ASTM D621
	@ Permanent Deformation	1.5 - 2.0	%	
	@ 24Hrs, 100°C, 5MPa	3.1 - 3.6	%	
Compressive Modulus	@ 0.2% Offset, 23°C	650 - 750	MPa	ASTM D621
Flexural Yield Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D790
Flexural Modulus	@ 23°C (Transverse Direct)	700	MPa	ASTM D790
Compressive Strength	@ 0.2% Offset, 23°C	-	MPa	ASTM D695
	@ 0.2% Offset, 150°C	-	MPa	
ELECTRICAL PROPERTIES		Value	Units	Standard
Dielectric Strength	@ Air (0.125mm Thk Tape)	90 - 105	KV/mm	ASTM D149
	@ Oil (0.125mm Thk Tape)	110 - 130	KV/mm	
Proof Test	(Dielectric Strength)	24 (Pass)	KV/mm	BS6564 (E)
Dielectric Constant	@ 60 Hz	2.014	-	ASTM D150
	@ 1 KHz	2.100	-	
Dissipation Factor	@ 60 Hz	< 10 ⁻⁴	-	ASTM D150
	@ 1 KHz	< 5 x 10 ⁻⁴	-	
Resistivity	@ Surface	10 ¹⁷	Ω	ASTM D257
	@ Volume	10 ¹⁸	Ω cm	
THERMAL PROPERTIES		Value	Units	Standard
Point of Fusion DSC		327	°C	ASTM D3417
Max. Working Temperature		260	°C	-
Max. Working Temperature	@ Short Periods	300	°C	-
Min. Working Temperature		-200	°C	-
Thermal Conductivity	@ Moulding Direction (MD)	0.35	W/(m.K)	ASTM C177
Coefficient of Linear Thermal Expansion TMA (23 - 200°C)	@ Moulding Direction (MD)	142	10 ⁻⁶ /°C	ASTM D696
	@ Right Angles to MD	142	10 ⁻⁶ /°C	
Flammability		None	-	UL94V(0)
Flash Point		None	°C	ASTM D1929
Limiting Oxygen Index		>95	%	ASTM D2863
WEAR PROPERTIES		Value	Units	Standard
Coefficient of Friction	@ 23°C Dry Sliding			ASTM D1894
	Static	0.08	-	
	Dynamic	0.06	-	
Coefficient of Wear	@23°C	2.2 x 10 ⁻⁴	cm ³ min/(kg m h)	-

The above properties are typical and are only intended to be used as a guide



Dalau UK

Dalau Limited,
 Ford Road,
 Clacton on Sea,
 Essex CO15 3DZ
 Tel: +44 (0) 1255 220220
 Fax: +44 (0) 1255 221122

Email: sales@dalau.com
 www.dalau.com

DALCON 086

Issued 25/09/97

PHYSICAL PROPERTIES (Typical)

Page 2 of 2

Ingredients: 100% Virgin P.T.F.E. Modified Polymer
 Filler/Pigment: None
 Colour: White (Natural)

CHEMICAL RESISTANCE

The strength of the carbon – fluorine bond and the shielding of the carbon chains by the fluorine atoms result in a chemical inertness which is virtually universal, except alkali metals, fluorine under certain conditions, and some fluorine compounds at elevated temperatures.

Some Fluorinated Hydrocarbons (refrigerants) cause reversible swelling i.e. Tetrafluorodichloroethane Frigen 21, giving a 9.6% weight increase.

For specific data on chemical resistance of this material we have a computer database with all the information covering over 90% of all known chemicals.

APPLICATIONS & INDUSTRIES

General:

The static and dynamic friction coefficient are numerically equal, consequently no 'Stick Slip' occurs. Modified PTFE has an advantage over Homopolymer (Normal PTFE), in that it has the following features:

Remarkable lower deformation under load and permanent deformation.
 Higher elongation at break. Higher flex life. Higher dielectric strength.
 Higher transparency. Lower permeability. Better heat sealability.

Chemical:

Dynamic & shaft seals.
 Pipes & tubing for carrying chemicals.
 Seals & gaskets. Flat gaskets are used to seal flanges in pipelines.

Construction:

Bridge bearings. Slide bearings.
 Electrical:
 Communications, radio & television engineering, cable insulation.
 Electrical plant construction & electronics industry (connectors & terminals).
 General electrical equipment (P.T.F.E. excellent electrical insulating material).
 Power plant installations (switchgear).

Engineering:

Anti - friction bearing cages & bearing plates.
 Bearings and bushes.
 Diaphragm pumps. Film bearings. Multi - layer composite bearings. Fabric bearings.
 Laboratory equipment. Measuring & control technology.
 Pipe supports. Expansion bellows. Glandless valves & pumps, valve seats.
 Piston rings in hydraulic systems.
 Piston rod packings used in compressor plunger pumps & valves.

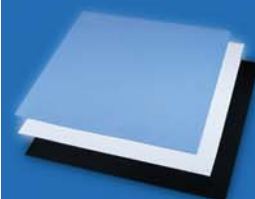
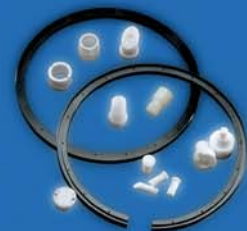
Food:

Dynamic & shaft seals (used in the food processing industry).
 Linings & coatings (fertiliser plant & food industry line equipment).

Weldability:

This material is weldable to itself, at melt temperature using applied pressure without bonding aids.

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 www.dalau.com