PRODUCT COMPARISON

GENERAL PURPOSE

Grade	PTN	PTM	PTO	PTT	CCP	F6N	FWN	GWN	HWN	SDN
Page Number	4-5	5	6	6	7	8-9	10	11	12	13
PHYSICAL PROPERTIES										
Monofilament Diameter ASTM D-204	.010	.010	.010	.010	.008	.008-.015	.010	.010	.015	.020
Flammability Rating*	UL94	UL94	UL94	UL94	UL94	UL94	–	–	UL94	–
Recommended Cutting	Hot Knife	Hot Knife	Hot Knife	Hot Knife	Scissor/HK	Hot Knife	Hot Knife	Hot Knife	Hot Knife	Hot Knife
Colors	25	3	7	1	2	3	4	1	3	1
Wall Thickness	.025	.025	.025	.025	.024	.024-.038	.025	.025	.038	.05
Tensile Strength (Yarn) ASTM D-2256 Lbs	7.5	7.5	7.5	7.5	6	6-10	7.5	7.5	10	19
Abrasion Resistance	Med	Med	Low	Med	Med	Med	Med	Med	High	High
Specific Gravity ASTM D-792	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.14
Moisture Absorption % ASTM D-570	.1-.2	.1-.2	.1-.2	.1-.2	.1-.2	.1-.2	.1-.2	.1-.2	.1-.2	2.5
Hard Vacuum Data ASTM E-595 at 10-5 torr										
TML	.19	.19	.19	.19	.19	.19	.19	.19	.19	1.10
CVCM	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
WVR	.16	.16	.16	.16	.16	.16	.16	.16	.16	.69
Smoke D-Max ASTM E-662	56	56	56	56	56	56	56	56	56	
Outgassing	Med	Med	Med	Med	Med	Med	Med	Med	Med	High
Oxygen Index ASTM D-2863	21	21	21	21	21	21	21	21	21	22
OPERATING TEMPERATURES										
Minimum Continuous	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C	-103°F/-75°C	-94°F/-70°C	-94°F/-70°C	-49°F/-45°C
Maximum Continuous Mil-I-23053	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C	302°F/150°C
Melt ASTM D-2117	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	493°F/256°C
CHEMICAL RESISTANCE 1=No Effect 2=Little Effect 3=Affected 4=More Affected 5=Severly Affected										
Aromatic Solvents	2	2	2	2	2	2	2	2	2	1
Aliphatic Solvents	1	1	1	1	1	1	1	1	1	1
Chlorinated Solvents	3	3	3	3	3	3	3	3	3	1
Weak Bases	1	1	1	1	1	1	1	1	1	1
Salts	1	1	1	1	1	1	1	1	1	1
Strong Bases	2	2	2	2	2	2	2	2	2	2
Salt Water O-S-1926	1	1	1	1	1	1	1	1	1	1
Hydraulic Fluid MIL-H-5606	1	1	1	1	1	1	1	1	1	1
Lube Oil MIL-L-7808	1	1	1	1	1	1	1	1	1	1
De-Icing Fluid MIL-A-8243	1	1	1	1	1	1	1	1	1	1
Strong Acids	3	3	3	3	3	3	3	3	3	5
Strong Oxidants	2	2	2	2	2	2	2	2	2	5
Esters/Keytones	1	1	1	1	1	1	1	1	1	1
UV Light	1	1	1	1	1	1	1	1	1	2
Petroleum	1	1	1	1	1	1	1	1	1	3
Fungus ASTM G-21	1	1	1	1	1	1	1	1	1	2
Halogen Free	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RoHS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SVHC	None	None	None	None	None	None	None	None	None	
UL/CSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

*UL94 V-0 RAW MATERIAL

PRODUCT COMPARISON

ADVANCED ENGINEERING

Grade	FWF	F9T	HTN	TFN	RYN	KVN	VEN	FGN	FGL	FHN
Page Number	26	27	28	29	30	31	31	32	33	34
PHYSICAL PROPERTIES										
Monofilament Diameter ASTM D-204	.010	.009	.011	.016	.008	NA	NA	NA	NA	NA
Flammability Rating*	VW-1	FAR 25	FAR 25, VW-1	FAR 25	FAR 25, UL94 V-0	—	Self Extinguishing	VW-1	VW-1	VW-1
Recommended Cutting	Hot Knife	Hot Knife	Hot Knife	Hot Wire/Knife	Hot Knife	Kevlar Shears	Kevlar Shears	Scissor	Scissor	Scissor
Colors	1	1	2	1	2	1	1	2	2	1
Wall Thickness	.025	.023	.028	.04	.024	.02	.025	.031-.061	.006-.016	.010-.024
Tensile Strength (Yarn) ASTM D-2256 Lbs	5	4.5	4.3	2.1	6.1	39	20			
Abrasion Resistance	Med	Med	Med	Very High	Med	Med	High	High	Med	Med
Specific Gravity ASTM D-792	1.38	1.38	1.68	2.15	1.37	1.44	1.4	1.0-1.8	1.0-1.8	1.0-1.8
Moisture Absorption % ASTM D-570	.1-.2	.1-.2	.02	<.01	.02		<.005	.01	.01	.01
Hard Vacuum Data ASTM E-595 at 10-5 torr										
TML	.19	.19	.18	.00	.08	3.13	.21	.02	.02	.01
CVCM	.04	.04	.02	.00	.00	.19	.00	.01	.01	.00
WVR	.06	.06	0	0	.04	1.76	.00	.00	.00	.00
Smoke D-Max ASTM E-662	275		94							
Outgassing	Med	Med	Low	Very Low	Low	High	Med	Low	Low	Low
Oxygen Index ASTM D-2863	31	31	64	>95	40	29	>30			
OPERATING TEMPERATURES										
Minimum Continuous	-94°F/-70°C	-94°F/-70°C	-103°F/-75°C	-94°F/-70°C	-94°F/-70°C	-274°F/-170°C	—	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C
Maximum Continuous Mil-I-23053	257°F/125°C	257°F/125°C	302°F/150°C	550°F/280°C	392°F/200°C	320°F/160°C	—	1,202°F/650°C	1,202°F/650°C	1,202°F/650°C
Melt ASTM D-2117	482°F/250°C	482°F/250°C	482°F/250°C	590°F/310°C	545°F/285°C	NA	625°F/330°C	2,048°F/1,120°C	2,048°F/1,120°C	2,048°F/1,120°C
CHEMICAL RESISTANCE 1=No Effect 2=Little Effect 3=Affected 4=More Affected 5=Severly Affected										
Aromatic Solvents	2	2	1	1	1	2		1	1	1
Aliphatic Solvents	1	1	1	1	1	2		1	1	1
Chlorinated Solvents	3	3	1	1	1	2	1	1	1	1
Weak Bases	1	1	1	1	1	1		1	1	1
Salts	1	1	1	1	1	1		1	1	1
Strong Bases	2	2	1	1	1	2		1	1	1
Salt Water O-S-1926	1	1	1	1	1	1	1	1	1	1
Hydraulic Fluid MIL-H-5606	1	1	1	1	1	1	1	1	1	1
Lube Oil MIL-L-7808	1	1	1	1	1	1	1	1	1	1
De-Icing Fluid MIL-A-8243	1	1	1	1	1	1		1	1	1
Strong Acids	3	3	1	1	1	2		2	2	2
Strong Oxidants	2	2	1	1	1	2		2	2	2
Esters/Keytones	2	2	2	2	1	1		1	1	1
UV Light	1	1	1	1	1	4		2	2	2
Petroleum	1	1	1	1	1	1	1	1	1	1
Fungus ASTM G-21	1	1	1	1	1	2		1	1	1
Halogen Free	Yes	Yes	No	No	Yes	Yes		Yes	Yes	Yes
RoHS	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes
SVHC	None	None						None	None	None
UL/CSA	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes

*UL94 V-0 RAW MATERIAL

EXTREME TEMPERATURE PRODUCTS

	FHH	See Pg. 35	HFN	HSN	VWN	SLN	T6F	See Pg. 40-41	NXN	WWN	FIN	FIA
	34	35	36	36	37	38	39	40-41	42	43	44	45
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	VW-1	VW-1	Non Flammable	Non Flammable	Non Flammable	Non Flammable	Non Flammable	Non Flammable	Self Extinguishing	Non Flammable	Non Flammable	Non Flammable
	Scissor	NA	Scissor	Scissor	Scissor	Scissor	Scissor	Scissor	Scissor/Shears	Scissor/Shears	Scissor	Scissor
	1	4	2	1	1	1	1	1	2	1	2	2
	.025-.035	.085	.0625-.125	.0625-.125		.06	.042	See Pg. 40-41	.016	.04	.072	.115
									8			
	Med	High	NA	NA	NA	Medium	NA	NA	Low	High	Extremely High	Extremely High
	1.0-1.8	1.0-1.8	2.6	2.2					1.38	NA	NA	NA
	.01	.01							4			
	.01	.02							3.94			
	.00	.01							.18			
	.00	.00							2.91			
	Low	Low										
									28			
	-94°F/-70°C	-94°F/-70°C	-70°F/-57°C	–	–	–	-76°F/-60°C	-76°F/-60°C	-320°F/-196°C	–	-65°F/-54°C	-65°F/-54°C
	1,202°F/650°C	1,202°F/650°C	1,200°F/649°C	2,000°F/1,093°C	1,200°F/649°C	1,800°F/982°C	392°F/200°C	491°F/255°C	662°F/350°C	400°F/204°C	500°F/260°C	500°F/260°C
	2,048°F/1,120°C	2,048°F/1,120°C	2,048°F/1,120°C	3,000°F/1,649°C	2,400°F/1,316°C	3,000°F/1,649°C	2,048°F/1,120°C	2,048°F/1,120°C	NA	NA	2,048°F/1,120°C	2,048°F/1,120°C
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	2	2	2	2	2	2	2	2	2	2	2	2
	2	2	2	2	2	2	2	2	2	2	2	2
	1	1	1	1	1	1	1	1		1	1	1
	2	2	2	2	2	2	1	1	2	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1		1	1	1
	Yes	Yes	Yes	Yes			Yes	Yes	Yes		Yes	Yes
	Yes	Yes					Yes	Yes	Yes		Yes	Yes
	None	None										
	Yes	Yes	No	No	No	No	No	No	No	No	No	No

HEAVY DUTY | METAL/SHIELDING | ADVANCED ENGINEERING

	NHN	DWN	DFN	DPN	MBN	SSN	SSL	FSN	CNN	CCF	FRN	L6N	F6F
	14	15	16	17	18	19	19	20	21	22	23	24	25
	FLAT FILAMENT .020	NA	NA	NA	.005-.010	.010-.016	.005-.010	.010	.011	.008	.010	NA	.008-.015
	—	—	—	—	Non Flammable	Non Flammable	Non Flammable	Non Flammable	—	VW-1	VW-1	—	VW-1
	Hot Knife	Scissor	Scissor	Scissor	Shears	Shears	Shears	Shears	Hot Knife	Scissor/HK	Hot Knife	Scissor	Scissor/HK
	1	1	1	1	1	1	1	1	1	2	4	2	1
	.05	.026	.045	.08	.013-.025	.025-.04	.013-.025	.025	.028	.024	.025	.046	.024-.038
	19									4	5		4-6.5
	Extremely High	Extremely High	High	Extremely High	Med	High	High	Low	Med	Med	Med	NA	High
	1.12	1.13	1.14	1.14	NA	NA	NA	NA	1.13	1.38	1.38	NA	1.38
	2.5	2.7	2.7	2.7	NA	NA	NA	NA	2.5	.1-.2	.1-.2	NA	.1-.2
	1.10	1.10	1.10	1.10		.00	.00		.19	.19	.19		.19
	.01	.01	.01	.01		.00	.00		.04	.04	.04		.04
	.69	.69	.69	.69		.00	.00		.06	.06	.06		.06
										275	275		275
	High	High	High	High		Very Low	Very Low			Med	Med		Med
	22	22	22	22						31	31		31
	-76°F/-60°C	-60°F/-51°C	-49°F/-45°C	-49°F/-45°C	—	—	—	-40°F/-40°C	-49°F/-45°C	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C	-94°F/-70°C
	302°F/150°C	200°F/93°C	248°F/120°C	248°F/120°C	—	—	—	302°F/150°C	302°F/150°C	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C
	509°F/265°C	410°F/210°C	410°F/210°C	410°F/210°C	449°F/232°C	2,650°F/1,454°C	2,650°F/1,454°C	449°F/232°C	482°F/250°C	482°F/250°C	482°F/250°C	482°F/250°C	446°F/230°C
	1	1	1	1	1	1	1	2	1	2	2	2	2
	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	3	1	3	3	2	3
	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	2	2	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2	2	2	3	2
	1	1	1	1	1	2	2	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1
	5	4	5	5	5	2	2	3	4	3	3	3	3
	5	4	5	5	5	2	2	2	4	2	2	2	2
	1	1	1	1	1	1	1	1	1	2	2	1	1
	1	1	2	2	2	1	1	1	2	1	1	1	1
	2	2	3	3	2	1	1	1	3	1	1	1	1
	2	1	2	2	2	1	1	1	2	1	1	1	1
	No	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
										None	None	None	None
	No	No	No	No	No	No	No	Yes	No	Yes	Yes	No	Yes

PRODUCT COMPARISON

SPECIALTY PRODUCTS

	STUDIO 3 KEY SLEEVE	DURA RACE	NONSKID	nylon	nylon	Mylar	Chrome
Grade	SKN	DRN	NSN	NYN	NMN	MYN/MYE	CHN
Page Number	46	48	49	50	51	52	53
PHYSICAL PROPERTIES							
Monofilament Diameter ASTM D-204	NA	NA	.028	.012	NA	.010	.010
Flammability Rating*	–	–	–	–	–	–	–
Recommended Cutting	Scissor	Scissor	Hot Knife	Hot Knife	Scissor	Hot Knife	Hot Knife
Colors	1 Reversible	1	3	1	1	3	1
Wall Thickness	.048	.012	.07	.03	.03-.06	.025	.025
Tensile Strength (Yarn) ASTM D-2256 Lbs				10.5			
Abrasion Resistance	High	Extremely High	Med	High	Extremely High	Very Low	Med
Specific Gravity ASTM D-792	NA	1.13	1.38	1.14	1.14	1.3	1.3
Moisture Absorption % ASTM D-570	NA	2.7	.1-.2	2.5	2.5	.1-.2	
Hard Vacuum Data ASTM E-595 at 10-5 torr							
TML				1.10	1.10	.19	.19
CVCM				.01	.01	.00	.00
WVR				.69	.69	.16	.16
Smoke D-Max ASTM E-662							
Outgassing				High	High	Med	Med
Oxygen Index ASTM D-2863				22	22	21	21
OPERATING TEMPERATURES							
Minimum Continuous	–	-60°F/-51°C	-40°F/-40°C	-49°F/-45°C	-49°F/-45°C	-94°F/-70°C	-94°F/-70°C
Maximum Continuous Mil-I-23053	–	200°F/93°C	175°F/79°C	302°F/150°C	248°F/120°C	257°F/125°C	257°F/125°C
Melt ASTM D-2117	NA	410°F/374°C	260°F/126°C	493°F/256°C	428°F/220°C	482°F/250°C	482°F/250°C
CHEMICAL RESISTANCE 1=No Effect 2=Little Effect 3=Affected 4=More Affected 5=Severly Affected							
Aromatic Solvents	1	1	2	1	1	2	2
Aliphatic Solvents	1	1	1	1	1	1	1
Chlorinated Solvents	1	1	3	1	1	3	3
Weak Bases	1	1	1	1	1	1	1
Salts	1	1	1	1	1	1	1
Strong Bases	2	2	2	2	2	3	3
Salt Water O-S-1926	1	1	1	1	1	1	1
Hydraulic Fluid MIL-H-5606	1	1	1	1	1	1	1
Lube Oil MIL-L-7808	1	1	1	1	1	1	1
De-Icing Fluid MIL-A-8243	1	1	1	1	1	1	1
Strong Acids	4	3	3	5	5	3	3
Strong Oxidants	4	4	2	5	5	2	2
Esters/Keytones	1	1	1	1	2	1	1
UV Light	1	1	1	2	2	1	1
Petroleum	2	2	1	3	2	1	1
Fungus ASTM G-21	1	1	1	2	3	1	1
Halogen Free		Yes	Yes	Yes	Yes	Yes	Yes
RoHS		Yes	Yes	Yes	Yes	Yes	Yes
SVHC						None	None
UL/CSA	No	No	No	No	No	No	No

*UL94 V-0 RAW MATERIAL

SPECIALTY PRODUCTS

	CXN	FFN	FTN	CAL/CAN/CAH	RFN	F6R	NRN	F6Q
	53	54	54	55	56	56	57	57
	.005	.006	.002-.003	NA	.010	.008-.015	.010	.008-.015
	–	UL94	–	Non Flammable	–	–	UL94	UL94
	Hot Knife	Hot Knife	Hot Knife	Scissor	Hot Knife	Hot Knife	Scissor /HK	Scissor /HK
	1	1	1	1	2	1	1	1
	.013	.015	.005-.008	.013-.030	.026	.024-.025	.025	.04
		4.5					7.5	7.5
	Med	Low	Very Low	Med	Low	Low	Med	Med
	1.3	1.38	1.14	1.75-1.85	1.38	1.38	1.38	1.38
	.1-.2	.1-.2	2.5		.1-.2	.1-.2	.1-.2	.1-.2
	.19	.19	1.10				.19	.19
	.00	.00	.01				.00	.00
	.14	.16	.69				.16	.16
	Med	Med	High				Med	Med
	21	21	22				21	21
	-94°F/-70°C	-94°F/-70°C	-49°F/-45°C	–	-22°F/-30°C	-22°F/-30°C	-94°F/-70°C	-94°F/-70°C
	302°F/150°C	257°F/125°C	248°F/120°C	–	257°F/125°C	257°F/125°C	257°F/125°C	257°F/125°C
	500°F/260°C	482°F/250°C	428°F/220°C	NA	446°F/230°C	446°F/230°C	446°F/230°C	466°F/230°C
	2	2	1		2	2	2	2
	1	1	1		1	1	1	1
	3	3	1		3	3	3	3
	1	1	1		1	1	1	1
	1	1	1		1	1	1	1
	3	2	2		2	2	2	2
	1	1	1		1	1	1	1
	1	1	1		1	1	1	1
	1	1	1		1	1	1	1
	1	1	1		1	1	1	1
	3	3	5		3	3	3	3
	2	2	5		2	2	2	2
	1	1	1	1	1	1	1	1
	1	1	2	2	1	1	1	1
	1	1	2		1	1	1	1
	1	1	3		1	1	1	1
	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	None	None					None	None
	No	No	No	No	No	No	No	No