

FORMEX™ GK/FORMEX PRODUCT DATA

FLAME RETARDANT POLYPROPYLENE SHEET

	TEST METHOD	FORMEX-10	FORMEX GK-10	FORMEX GK-17	FORMEX GK-30	FORMEX GK-40
COLOR		NATURAL	NATURAL/BLACK	NATURAL/BLACK	NATURAL/BLACK	NATURAL/BLACK
THICKNESS-INCH		.010 + .003/ - .0015	.010 + .003/ - .0015	.017 + .003/ - .001	.030 ± .002	.040 ± .002
THICKNESS-MILLIMETER		.25 + .08/ - .04	.25 + .08/ - .04	.43 + .08/ - .03	.76 ± .05	1.02 ± .05
MECHANICAL PROPERTIES						
TENSILE YIELD-PSI	ASTM D-882					
MACHINE DIRECTION		4800	4400	4400	4400	4400
TRANSVERSE DIRECTION		3600	3200	3200	3200	3200
PHYSICAL PROPERTIES						
DENSITY-GM/CC	ASTM D-792	0.988	1.035	1.035	1.035	1.035
FLAMMABILITY	UL 94	VTM-0	VTM-0	V-0	V-0	V-0
OXYGEN INDEX	ASTM D-2863	28	29	29	29	29
WATER ABSORPTION-% CHANGE IN WEIGHT	ASTM D-570	0.01%	0.06%	0.06%	0.06%	0.06%
HEAT DEFLECTION TEMPERATURE AT 66 PSI	ASTM D-648	106°C/223°F	121°C/239°F	121°C/250°F	121°C/250°F	121°C/250°F
RELATIVE THERMAL INDEX	UL 746B					
ELECTRICAL		95°C/203°F	105°C/221°F	115°C/239°F	115°C/239°F	115°C/239°F
MECHANICAL WITHOUT IMPACT		95°C/203°F	105°C/221°F	115°C/239°F	115°C/239°F	115°C/239°F
ELECTRICAL PROPERTIES						
DIELECTRIC BREAKDOWN-VOLTS	ASTM D-149	18,000	22,000	24,820	32,400	37,800
DIELECTRIC STRENGTH-VOLTS/MIL	ASTM D-149	1800	2200	1460	1080	945
VOLUME RESISTIVITY-OHM-CM	ASTM D-257	146 x 10 ¹⁵	3.97 x 10 ¹⁵	3.97 x 10 ¹⁵	3.97 x 10 ¹⁵	3.97 x 10 ¹⁵
DIELECTRIC CONSTANT	ASTM D-150	2.30	2.30	2.30	2.30	2.30
DISSIPATION FACTOR	ASTM D-150	0.0009	0.0019	0.0019	0.0019	0.0019
HIGH CURRENT ARC IGNITION-ARCS TO IGNITE	UL 746A	113	80+	162+	200+	200+
HIGH VOLTAGE ARC TRACKING-IN/MIN	UL 746A	0.0	0.0	0.0	0.0	0.0
HOT WIRE IGNITION-SECONDS	UL 746A	6+	7	9	12	12
COMPARATIVE TRACKING INDEX-VOLTS	ASTM D-3638	600+	600+	600+	600+	600+
PACKAGING INFORMATION						
STANDARD CONFIGURATION		ROLL	ROLL	ROLL & SHEET	ROLL & SHEET	SHEET
CORE ID-INCHES		6	6	6	6	-
ROLL OD-INCHES		APPROX 18	APPROX 18	APPROX 18	APPROX 18	-
ROLL WIDTH-INCHES		24	24	24	24	-
ROLL WEIGHT-LBS (APPROXIMATE)		225	225	200	200	-
LENGTH/ROLL-FEET		2000	2000	1000	600	-
AREA/ROLL-SQUARE FEET		4000	4000	2000	1200	-
SHEET SIZES-INCHES		-	-	24 x 48	24 x 48, 48 x 96*	24 x 48, 48 x 96*

*BLACK ONLY

NOTICE: THE ABOVE DATA IS BELIEVED TO BE ACCURATE AND RELIABLE. ITW ASSUMES NO RESPONSIBILITY FOR END USE APPLICATIONS AND NO PERFORMANCE WARRANTY IS EXPRESSED OR IMPLIED.

 FILE NUMBER E121855-YELLOW CARD
AVAILABLE ON REQUEST

FOR A COMPLETE LISTING OF FORMEX PRODUCTS,
CONTACT YOUR FORMEX/STATEX SALES REPRESENTATIVE.

 FILE NUMBER LS96638

FORMEX™ GK/FORMEX PRODUCT DATA

FLAME RETARDANT POLYPROPYLENE SHEET

	TEST METHOD	FORMEX GK-62	FORMEX 94-BK	FORMEX 125-BK
COLOR		NATURAL/BLACK/RED	BLACK	BLACK
THICKNESS—INCH		.062 ± .004	.094 ± .004	.125 ± .007
THICKNESS—MILLIMETER		1.57 ± .10	2.38 ± .10	3.18 ± .18
MECHANICAL PROPERTIES				
TENSILE YIELD—PSI	ASTM D-882			
MACHINE DIRECTION		4400	4800	4800
TRANSVERSE DIRECTION		3200	3600	3600
PHYSICAL PROPERTIES				
DENSITY—GM/CC	ASTM D-792	1.035	0.988	0.988
FLAMMABILITY	UL 94	V-0	V-0	V-0
OXYGEN INDEX	ASTM D-2863	29	28	28
WATER ABSORPTION—% CHANGE IN WEIGHT	ASTM D-570	0.06%	0.01%	0.01%
HEAT DEFLECTION TEMPERATURE AT 66 PSI	ASTM D-648	121°C/250°F	106°C/223°F	106°C/223°F
RELATIVE THERMAL INDEX	UL 746B			
ELECTRICAL		115°C/239°F	110°C/230°F	110°C/230°F
MECHANICAL WITHOUT IMPACT		115°C/239°F	110°C/230°F	120°C/248°F
ELECTRICAL PROPERTIES				
DIELECTRIC BREAKDOWN—VOLTS	ASTM D-149	45,260	56,400	62,500
DIELECTRIC STRENGTH—VOLTS/MIL	ASTM D-149	730	600	500
VOLUME RESISTIVITY—OHM-CM	ASTM D-257	3.97 X 10 ¹⁵	146 X 10 ¹⁵	146 X 10 ¹⁵
DIELECTRIC CONSTANT	ASTM D-150	2.30	2.30	2.30
DISSIPATION FACTOR	ASTM D-150	0.0019	0.0009	0.0009
HIGH CURRENT ARC IGNITION—ARCS TO IGNITE	UL 746A	200+	200+	200+
HIGH VOLTAGE ARC TRACKING—IN/MIN	UL 746A	0.0	0.0	0.0
HOT WIRE IGNITION—SECONDS	UL 746A	12	30	36
COMPARATIVE TRACKING INDEX—VOLTS	ASTM D-3638	600+	600+	600+
PACKAGING INFORMATION				
STANDARD CONFIGURATION		SHEET	SHEET	SHEET
CORE ID—INCHES		—	—	—
ROLL OD—INCHES		—	—	—
ROLL WIDTH—INCHES		—	—	—
ROLL WEIGHT—LBS (APPROXIMATE)		—	—	—
LENGTH/ROLL—FEET		—	—	—
AREA/ROLL—SQUARE FEET		—	—	—
SHEET SIZES—INCHES		24 X 48, 48 X 96*	24 X 48	24 X 48

*BLACK ONLY

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 FILE NUMBER E121855—YELLOW CARD
AVAILABLE ON REQUEST

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CONTACT YOUR FORMEX/STATEX SALES REPRESENTATIVE.

 FILE NUMBER LS96638

REV 5/98

STATEX™ PRODUCT DATA

STATIC DISSIPATIVE FLAME RETARDANT POLYPROPYLENE SHEET

	TEST METHOD	STATEX-10	STATEX-18
COLOR		NATURAL*	NATURAL*
THICKNESS-INCH		.010 + .003/ -.0015	.018 + .004/ -.002
THICKNESS-MILLIMETER		.25 + .08/ -.04	.46 + .10/ -.05
MECHANICAL PROPERTIES			
TENSILE YIELD-PSI	ASTM D-882		
MACHINE DIRECTION		4800	4800
TRANSVERSE DIRECTION		3600	3600
PHYSICAL PROPERTIES			
DENSITY-GM/CC	ASTM D-792	0.988	0.988
FLAMMABILITY	UL 94	VTM-0	V-0
OXYGEN INDEX	ASTM D-2863	28	28
WATER ABSORPTION -% CHANGE IN WEIGHT	ASTM D-570	0.01%	0.01%
HEAT DEFLECTION TEMPERATURE AT 66 PSI	ASTM D-648	106°C/223°F	106°C/223°F
RELATIVE THERMAL INDEX	UL 746B		
ELECTRICAL		95°C/203°F	100°C/212°F
MECHANICAL WITHOUT IMPACT		95°C/203°F	100°C/212°F
ELECTRICAL PROPERTIES			
STATIC DECAY-SECONDS (Federal Test Method 101C)	ASTM D-257	< 2	< 2
SURFACE RESISTIVITY-OHMS/SQUARE	ASTM D-257	10 ⁹ TO 10 ¹¹	10 ⁹ TO 10 ¹¹
DIELECTRIC BREAKDOWN -VOLTS	ASTM D-149	17,500	27,540
DIELECTRIC STRENGTH -VOLTS/MIL	ASTM D-149	1750	1530
VOLUME RESISTIVITY-OHM-CM	ASTM D-257	146 X 10 ¹⁵	146 X 10 ¹⁵
DIELECTRIC CONSTANT	ASTM D-150	2.30	2.30
DISSIPATION FACTOR	ASTM D-150	0.0009	0.0009
HIGH CURRENT ARC IGNITION-ARCS TO IGNITE	UL 746A	113	23
HIGH VOLTAGE ARC TRACKING-IN/MIN	UL 746A	0.0	0.0
HOT WIRE IGNITION-SECONDS	UL 746A	6+	11
COMPARATIVE TRACKING INDEX-VOLTS	ASTM D-3638	600+	600+

* Product is line-marked to indicate static dissipative material.

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FILE NUMBER E121855-YELLOW CARD AVAILABLE ON REQUEST



FILE NUMBER LS96638

FOR A COMPLETE LISTING OF STATEX PRODUCTS, CONTACT YOUR FORMEX/STATEX SALES REPRESENTATIVE.

February 28, 1996

QMFZ2
Component-Plastics

FASTEX, DIV. OF ILLINOIS TOOL WORKS INC
195 ALGONQUIN RD., DES PLAINES IL 60016

E121855 (N)
(A1-cont. from A card)

Mtl Dsg	Col	Min Thk mm	UL94 Flame Class	RTI		H W I	H A I	H V R	D 4 9 5	C T I
				Elec	Mech with Imp					
Polypropylene (PP), furnished in the form of sheets.										
FORMEX GK-	All	0.20	94VTM-0	105	—	105	5	1	@	@
(a)(b)(f2) @	All	0.41	94V-0	115	—	115	4	0	@	@
	All	0.71	94V-0	115	—	115	4	0	@	@
	All	3.05	94V-0	115	—	115	1	0	0	6

Report: January 31, 1993.

(a)—One to three digit suffix indicating nominal thickness in mils.

(b)—May have an additional letter suffix indicating color.

(f2)—Subjected to one or more of the following test: Ultraviolet light, Water exposure or Immersion in accordance with UL 746C, where the acceptability for outdoor use is to be determined by ULI.

(@)—HVTR, D495 and CTI are thickness independent; see rating at thickness tested.

Replaces E121855A1 dated February 18, 1994.
357863001 N7047 Underwriters Laboratories Inc.®

(Cont. on B card)
D11/0230905
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ITW Fastex
195 Algonquin Road
Des Plaines, Illinois 60016-6197
Telephone 847.299.2222
FAX 847.390.6183



Plastic and Metal Components

FORMEX

MATERIAL SAFETY DATA

IDENTIFICATION

PRODUCT: FORMEX- XX (XX denotes nominal thickness in mils)
CHEMICAL NAME: Proprietary Blend
CHEMICAL FAMILY: Flame Retardant Polyolefin Compound

HEALTH INFORMATION

EYE CONTACT: Mechanical irritation due to small pieces.
SKIN CONTACT: Unlikely to cause irritation.
INHALATION: Mechanical irritation due to small pieces.
INGESTION: Not a probable route of exposure.

OCCUPATIONAL EXPOSURE LIMITS

No OSHA PEL or ACGIH TLV has been established.

EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with water; do not rub eyes.
SKIN CONTACT: If contact with molten material occurs, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical advice for thermal burn.
INHALATION: Breathe clean air.
INGESTION: Not a probable route of exposure.

If irritation of eyes or skin persists, obtain medical advice.

PHYSICAL DATA

BOILING POINT (°F): NA
SPECIFIC GRAVITY (H₂O=1): 0.99
SOLUBILITY IN H₂O: Insoluble
APPEARANCE AND ODOR: Solid sheet, essentially odorless.
VAPOR PRESSURE (mm Hg): NA
VAPOR DENSITY (air=1): NA

FIRE AND EXPLOSION HAZARDS

FLASH IGNITION: >357°C
EXTINGUISHING MEDIA: Water, foam, dry chemicals, or carbon dioxide.
SPECIAL FIRE FIGHTING PROCEDURES: Material will not burn unless preheated.
Do not enter confined fire space without a positive pressure NIOSH approved self-contained breathing apparatus with a full facepiece. Cool fire exposed containers with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Material is a UL recognized 94V-0 or VTM-0 product.

REACTIVITY

STABILITY: Stable

CONDITIONS AND MATERIALS TO AVOID: Strong oxidizing agents.

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION: Not ordinarily required.

PROTECTIVE CLOTHING: Not ordinarily required.

ADDITIONAL PROTECTIVE MEASURES: Avoid prolonged exposure to vapors from molten or near molten product. Provide adequate ventilation when processing under these conditions.

ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES: Shovel, sweep, or vacuum to prevent slipping hazards. Contain material for reclamation or disposal.

WASTE DISPOSAL: Incineration or landfill in compliance with Federal, State and Local regulations.

REGULATORY CONTROLS

D.O.T. CLASSIFICATION: Not hazardous by D.O.T. regulations.

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR Part 372.

<u>CAS#</u>	<u>Chemical Name</u>	<u>Percent by Weight</u>
1309-64-4	Antimony Trioxide	4.4%

The information contained herein is based on the data available to us and is believed to be correct. However, Fastex makes no warranty express or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Fastex assumes no responsibility for injury from the use of the product described herein.

ITW Fastex
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Des Plaines, Illinois 60016-6197
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Plastic and Metal Components

FORMEX GK

MATERIAL SAFETY DATA

IDENTIFICATION

PRODUCT: FORMEX GK- XX (XX denotes nominal thickness in mils)
CHEMICAL NAME: Proprietary Blend
CHEMICAL FAMILY: Flame Retardant Polyolefin Compound

HEALTH INFORMATION

EYE CONTACT: Mechanical irritation due to small pieces.
SKIN CONTACT: Unlikely to cause irritation.
INHALATION: Mechanical irritation due to small pieces.
INGESTION: Not a probable route of exposure.

OCCUPATIONAL EXPOSURE LIMITS

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EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with water; do not rub eyes.
SKIN CONTACT: If contact with molten material occurs, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical advice for thermal burn.
INHALATION: Breathe clean air.
INGESTION: Not a probable route of exposure.

If irritation of eyes or skin persists, obtain medical advice.

PHYSICAL DATA

BOILING POINT (°F): NA
SPECIFIC GRAVITY (H₂O=1): 1.035
SOLUBILITY IN H₂O: Insoluble
APPEARANCE AND ODOR: Solid sheet, essentially odorless.
VAPOR PRESSURE (mm Hg): NA
VAPOR DENSITY (air=1): NA

FIRE AND EXPLOSION HAZARDS

EXTINGUISHING MEDIA: Water, foam, dry chemicals, or carbon dioxide.
SPECIAL FIRE FIGHTING PROCEDURES: Material will not burn unless preheated.
Do not enter confined fire space without a positive pressure NIOSH approved self-contained breathing apparatus with a full facepiece. Cool fire exposed containers with water.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Material is a UL recognized 94V-0 or VTM-0 product.

REACTIVITY

STABILITY: Stable

CONDITIONS AND MATERIALS TO AVOID: Strong oxidizing agents.

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION: Not ordinarily required.

PROTECTIVE CLOTHING: Not ordinarily required.

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REGULATORY CONTROLS

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<u>CAS#</u>	<u>Chemical Name</u>	<u>Percent by Weight</u>
1309-64-4	Antimony Oxide	6.1%

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Plastic and Metal Components

STATEX

MATERIAL SAFETY DATA

IDENTIFICATION

PRODUCT: STATEX- XX (XX denotes nominal thickness in mils)
CHEMICAL NAME: Proprietary Blend
CHEMICAL FAMILY: Flame Retardant Polyolefin Compound

HEALTH INFORMATION

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SKIN CONTACT: Unlikely to cause irritation.
INHALATION: Mechanical irritation due to small pieces.
INGESTION: Not a probable route of exposure.

OCCUPATIONAL EXPOSURE LIMITS

No OSHA PEL or ACGIH TLV has been established.

EMERGENCY FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with water; do not rub eyes.
SKIN CONTACT: If contact with molten material occurs, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical advice for thermal burn.
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If irritation of eyes or skin persists, obtain medical advice.

PHYSICAL DATA

BOILING POINT (°F): NA
SPECIFIC GRAVITY (H₂O=1): 0.99
SOLUBILITY IN H₂O: Insoluble
APPEARANCE AND ODOR: Solid sheet, essentially odorless.
VAPOR PRESSURE (mm Hg): NA
VAPOR DENSITY (air=1): NA

FIRE AND EXPLOSION HAZARDS

FLASH IGNITION: >357°C
EXTINGUISHING MEDIA: Water, foam, dry chemicals, or carbon dioxide.
SPECIAL FIRE FIGHTING PROCEDURES: Material will not burn unless preheated.
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REACTIVITY

STABILITY: Stable

CONDITIONS AND MATERIALS TO AVOID: Strong oxidizing agents.

EMPLOYEE PROTECTION

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PROTECTIVE CLOTHING: Not ordinarily required.

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REGULATORY CONTROLS

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<u>CAS#</u>	<u>Chemical Name</u>	<u>Percent by Weight</u>
1309-64-4	Antimony Trioxide	4.4%

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