

PERFORATION PATTERNS

- P** Hole size .045" diameter, staggered on 1/4" centers, open area 1.25%
- P2** Needle-punch holes staggered on 1/2" center.
- P3** Needle-punch (.015" diameter) staggered on 1/4" centers. No mark off. Approximately 3% resin loss.
- P4** Hole size .045" diameter on 2" centers. Open area is .04%.
- P5** Hole size .045" diameter on 3 1/2" centers. Open area is .023%.
- P6** Needle-punch .015" diameter on 2" centers. Designed for BMI, PI and phenolics.
- P7** Needle-punch .015" diameter on 3" centers. Designed for BMI, PI and phenolics.
- P8** Needle-punch .015" diameter on 8" centers. Will retain low viscosity hot melt resins but allow gases to escape. No mark off.
- P10** Hole size .045" diameter on 10" centers. Will retain all resin in net resin prepreg and allow gases to escape. Designed for hot melt matrix.
- P11** Needle-punch .015" diameter. Twice the open area of P3. Designed for bondline control and tooling prepregs.
- P31** Needle Punch 0.015" diameter on 1" centers. Open area 0.018%
- P34** Hole size .045" diameter on staggered 1/2" centers. Open area 0.318%
- MP25** Micro needle punch .0005" diameter on staggered 1mm centers. Open area 0.307%

The above perforations are the standard patterns. Other patterns are available on special request.

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

HAWKEYE

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DATA SHEET

A5000 RELEASE FILM

HAWKEYE A5000 RELEASE FILM is a high temperature release film which lends itself readily to overcome bridging in contour layups. With more elongation than the HK3760 or nylon films, this material can be used in conjunction with our stretchable Resin Bleeder 3000A or 3000-10 to make a vacuum bag layup regardless of how critical the contour.

SPECIFICATIONS

| | |
|------------------|--|
| Thickness: | .001" and .002" - Standard |
| Widths: | Widths To 78" Wide |
| Yield: | 90.28 sq. ft./lb (approx.) |
| Color: | Transparent Clear |
| Density: | 2.14 |
| Weight: | 26.8 lbs/roll (approx) |
| Elongation*: | 350%* |
| Melting Point: | 540° F (282° C) |
| Use Temperature: | 500° F (260° C) |
| Release: | Chemically inert to all Commercial resin systems |
| Flammability: | Non-Flammable |
| Shelf Life: | Indefinite |

* The 350% elongation makes this most suitable for sharp or multi-contour layups

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DATA SHEET

A 5000P (PERFORATED) RELEASE FILM (SEE PERFORATION PATTERN LIST)

HAWKEYE A5000P RELEASE FILM is a high temperature release film which lends itself easily to overcome bridging in contour layups. With more elongation than the HK3760P, or nylon films, this product can be used in conjunction with our stretchable Resin Bleeder 3000A or 3000-10 to produce vacuum bag layups regardless of how critical the contour.

SPECIFICATIONS

| | |
|------------------|--|
| Thickness: | .001" and .002" - Standard |
| Widths: | Widths to 78" |
| Yield: | 90.28 sq. ft. per lb. (approx.) |
| Color: | Transparent Clear |
| Density: | 2.14 |
| Weight: | 26.8 lbs/roll (approx) |
| Elongation: | 350% |
| Melting Point: | 540° F (282° C) |
| Use Temperature: | 500° F (260° C) |
| Release: | Chemically inert to most Commercial Resins |
| Flammability: | Non-Flammable |
| Perforations: | See Perforation Table |
| Shelf Life: | Indefinite |

* The 350% elongation makes this most suitable for sharp or multi-contour layups

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

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DATA SHEET

A5000R (RED) RELEASE FILM

HAWKEYE A5000R RELEASE FILM is a red, high temperature release film. The red color ensures that personnel can easily verify that the product has been applied to the part in the proper location. It also ensures that the product is removed from the part when the operation is completed.

This product lends itself readily to overcome bridging in contour layups. Due to its higher elongation than the HK3760 Release Film, this material can be used in conjunction with our stretchable Resin Bleeders to make a vacuum bag layup, regardless of how critical the contour.

SPECIFICATIONS

| | |
|------------------|---|
| Thickness: | .001" and .002" - Standard |
| Width: | Widths to 78" |
| Yield: | 90.28 sq. ft./lb (approx) |
| Color: | Red |
| Density: | 2.14 |
| Weight: | 22 lbs per roll (approx) |
| Elongation:* | 350% |
| Melting Point: | 540° F (282° C) |
| Use Temperature: | 500° F (260° C) |
| Release: | Chemically inert to most commercial resin systems |
| Flammability: | Non-Flammable |
| Shelf Life: | Indefinite |

* The 350% elongation makes this most suitable for sharp or multi-contour layups

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A5000R (PERFORATED) RELEASE FILM (SEE PERFORATION PATTERN LIST)

HAWKEYE A5000R PERFORATED RELEASE FILMS are red, high temperature release films. The red color ensures that personnel can easily verify that the product has been applied to the part in the proper locations. It also ensures that the product is removed from the part when the operation is completed.

As the A5000R, non-perforated, release film, these films lend themselves readily to critical contours and shapes. With more elongation than other types of films, this material can be used in conjunction with our stretchable bleeders for critically contoured vacuum layups.

SPECIFICATIONS

| | |
|------------------|---|
| Thickness: | .001" and .002" - Standard |
| Widths: | Widths to 78" |
| Yield: | 90.28 sq. ft./lb (approx) |
| Color: | Red |
| Density: | 2.14 |
| Weight: | 22 lbs per roll (approx) |
| Elongation:* | 350% |
| Melting Point: | 540° F (282° C) |
| Use Temperature: | 500° F (260° C) |
| Release: | Chemically inert to most commercial resin systems |
| Flammability: | Non-Flammable |
| Shelf Life: | Indefinite |
| Perforations: | See Perforation Pattern List |

* The 350% elongation makes this most suitable for sharp or multi-contour layups

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A5100 RELEASE FILM

A5100 RELEASE FILMS have proven most cost-effective when used as a release film in the fabrication of advanced composite materials. It has excellent release properties and can be used with common resins, including epoxy, polyester, phenolic, and other resin matrices. A5100 can be used in vacuum bag processing with cure temperatures approaching 375 degrees F. Its high tear strength means that it can be handled with confidence and its high elongation ensures that it will conform closely to even the most complex shapes.

Tinted grades are available so that personnel can easily verify that the A5100 has been applied on the part, and in the correct manner. In addition, A5100 offers a significant density advantage over other high temperature release films.

Both perforated and non-perforated types are offered.

SPECIFICATIONS

| | |
|------------------|--|
| Thickness: | .0005", .001", .002", .005" & .010" |
| Width: | Widths to 78" |
| Yield: | 115 sq. ft./lb/mil. (approx) |
| Density: | 1.68 |
| Weight: | 22 lbs per roll (approx) |
| Elongation: | 200% |
| Melting Point: | 464°F (240° C) |
| Use Temperature: | 375° F (191° C) |
| Release: | Chemically inert to most commercial resins systems |
| Flammability: | Non-Flammable |
| Shelf Life: | Indefinite |

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A5100P (PERFORATED) RELEASE FILM (SEE PERFORATED PATTERN LIST)

A5100 PERFORATED RELEASE FILMS have proved most cost-effective when used as a release film in the fabrication of advanced composite materials. Perforated A5100 films are unique among release films. A5100P has excellent release properties and can be used with common resins, including epoxy, polyester, phenolic and other resin matrices. A5100 can be used in vacuum bag processing with cure temperatures approaching 375 Degrees F. Its high tear strength means that it can be handled with confidence and it's high elongation ensures that it will conform closely to even the most complex shapes.

Tinted grades are available so that personnel can easily verify that the A5100 has been applied on the part, and in the correct manner. In addition, A5100 offers a significant density advantage over other high temperature release films.

SPECIFICATION

| | |
|------------------|---|
| Thickness: | .0015", .001", .002" - Standard |
| Width: | Widths to 78" |
| Yield: | 115 sq. ft./lb/mil (approx) |
| Density: | 1.68 |
| Weight: | 22 lbs per roll (approx) |
| Elongation: | 200% |
| Melting Point: | 464° F (240° C) |
| Use Temperature: | 375° F (191° C) |
| Release: | Chemically inert to most commercial resin systems |
| Flammability: | Non-Flammable |
| Shelf Life: | Indefinite |
| Perforations: | See Perforation Pattern List |

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A5199 RELEASE FILM

A5199 Release Film can be used for most applications in the printed circuit and lamination industry. A5199 Release Film was developed to address the needs of this demanding process and to provide the user with a functionally superior product that is environmentally safe. The film was designed to remain very flexible under all pressing conditions and will not crack or melt during most applications. It can be used against copper, stainless steel, aluminum, prepreg (both cured and "B" stage) and oxidized copper surfaces.

A5199 Release Film does not shrink, assuring a stable multilayer and laminate package. It reduces wrinkling of copper foil. The film remains flexible and will not become brittle, even at temperatures above 400°F (204°C) The film is static-free which assures clean and uniform lamination without static cling and easy releases. A5199 remains smear and scum free which eliminates contamination of plates which reduces unnecessary down-time for cleaning.

The film is odorless with no offensive or hazardous gases emitted. It is environmentally safe and can be incinerated or disposed of in a landfill.

SPECIFICATIONS

| | |
|-------------------------------------|-----------------------------|
| Thickness: | .001" |
| Width: | up to 51" ** |
| Color: | Hazy Transparent |
| Use Temperature: | 400°F (204°C) |
| Operating Pressure at 400°F (204°C) | Approx 370 – 380 PSI |
| Operating Time at 400°F (204°C) | 2-3 Hours |
| Yield: | 150 sq ft/lb |
| Surface Roughness, µm | 0.94 |
| Tensile Strength, kpsi | MD-20 TD-24 |
| Elongation, % | MD-90 TD-60 |
| Initial Tear Resistance, lb/mil | 2 |
| Release: | Non-reactive to most resins |
| Flammability: | Non Flammable |
| Shelf Life: | Indefinite |

** Other roll widths and cut-to-size can be quoted on request.

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DATA SHEET

A5220 RELEASE FILM

Hawkeye A5220 is an ETFE release film with over 300% elongation. A5220 will release from all composite laminates or metal bond adhesives to 450 deg F (230 deg C). Hawkeye A5220 is ideal as a release in printed circuit applications. It also works well on BMI laminates, first cure and post cure.

SPECIFICATIONS

| | |
|---|--------------------|
| Thickness: | .00075" - .002" |
| Width: | to 130" (330.20cm) |
| Elongation at break: (ASTM D882) | 350% |
| Tensile Strength (psi): (ASTM D882) | 7000 psi (48 Mpa) |
| Tear Strength (g/mil - min.): (ASTM D1922) | .001" - 1.5 g/mil |
| Maximum Use Temperature: | 500° F (260° C) |
| Density (g/cm): (ASTM D792) | 1.73-1.74 g/cc |
| Yield: | 15,945 in2/lb/mil |
| Color: | White or Blue |
| Shrinkage (@ 392 degrees F -200 degrees C): | 3% |
| Melt Point: (ASTM D3418) | 510° F (257° C) |
| Shelf Life: | 18 months |

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A5220 (Perforated) RELEASE FILM

Hawkeye A5220 is a perforated ETFE release film with over 300% elongation. A5220 perforated will release from all composite laminates or metal bond adhesives to 450 deg F (230 deg C), while allowing volatiles to escape. Hawkeye A5220 is ideal as a release in printed circuit applications. It also works well on BMI laminates, first cure and post cure.

SPECIFICATIONS

| | |
|---|--------------------------------|
| Thickness: | .00075" - .002" |
| Width: | to 78" (198 cm) |
| Elongation at break: (ASTM D882) | 350% |
| Tensile Strength (psi): (ASTM D882) | 7000 psi (48 Mpa) |
| Tear Strength (g/mil - min.): (ASTM D1922) | .001" - 1.5 g/mil |
| Maximum Use Temperature: | 500° F (260° C) |
| Density (g/cm): (ASTM D792) | 1.73-1.74 g/cc |
| Yield: | 15,945 in ² /lb/mil |
| Color: | White or Blue |
| Shrinkage (@ 392 degrees F -200 degrees C): | 3% |
| Melt Point: (ASTM D3418) | 510° F (257° C) |
| Shelf Life: | 18 months |

NOTE: Technical information furnished by HAWKEYE is based upon laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions

DATA SHEET

EX RELEASE FILM

Hawkeye EX Release Film has been engineered as a replacement for Tedlar® products and as such can be used in various applications. It also provides higher temperature performance than Tedlar® films. EX Release Film can be used both as a release film or compressive film overwraps in advanced composites, printing and aerospace applications.

Hawkeye EX Release Film is a thermoplastic monomer film with a one-side matte finish giving your part a surface finish suitable for additional bonding. Our EX Film eliminates the need for subsequent finishing or sanding operations. It is also an excellent film used between press plates or for curing composite counter materials.

SPECIFICATIONS

| | |
|-------------------|---------------|
| Color: | Light Yellow |
| Thickness: | .002" |
| Width: | to 60" wide |
| Use Temperatures | 450°F (230°C) |
| Specific Gravity: | 1.50 |

** Other roll widths and cut-to-size can be quoted on request.

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DATA SHEET

HK3760 RELEASE FILM

HAWKEYE HK3760 RELEASE FILM is a high temperature non-perforated release film, which can be used in either contour or flat layups. This film releases exceptionally well against epoxy phenolic and polyester system.

SPECIFICATIONS

| | |
|---|---|
| Thickness: | .001" and .002" - Standard |
| Width: | Widths to 72" |
| Yield (sq. in./lb/mil): | 20,000 |
| Specific Gravity: | 1.6 |
| Release Properties: | Excellent with all Resin Systems Tested |
| Elongation: | Over 200% |
| Heat Sealing Range: | 400 – 450° F (204-232°C) |
| Shrinkage at 350 degrees F: | 2.6% |
| Water Absorption (24 hr immersion - %Wt): | Less than 5% |
| Resistance To: | |
| Alkalis: | Excellent |
| Oils & Grease: | Excellent |
| Organic Solvents: | Excellent |
| Ultraviolet: | Excellent |
| Shelf Life: | Indefinite |

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DATA SHEET

HK3760P (PERFORATED) RELEASE FILM

HAWKEYE HK3760 PERFORATED RELEASE FILM is a high temperature perforated release film which can be used in either contour or flat lay-ups. This film releases exceptionally well against epoxy, phenolic and polyester systems.

The standard perforation patterns for HK3760 are as follows:
(Other patterns available. See Perforation Pattern List)

P1 Pattern: Actual holes 1/2 inch centers on staggered background.

P2 Pattern: Staggered pin prick.

The one mil material is recommended for vacuum bagging, or as a releases film under the bleeder. The 2 mil material is recommended for release film directly against the tool.

SPECIFICATIONS

| | |
|--|---|
| Thickness: | .001" and .002" - Standard |
| Widths: | Widths to 72" |
| Yield: | 20,000 sq. in./lb/mil |
| Specific Gravity: | 1.6 |
| Release Properties: | Excellent with all Resin Systems Tested |
| Elongation: | Over 200% |
| Heat Sealing Range: : | 400 – 450° F (204-232° C) |
| Water Absorption (24 hr immersion - %Wt.): | Less than 5% |
| Resistance To | |
| Alkalis: | Excellent |
| Ultraviolet: | Excellent |
| Oils & Greases: | Excellent |
| Organic Solvents: | Excellent |
| Shelf Life: | Indefinite |
| Perforations: | See Perforation Pattern List |

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DATA SHEET

HK4600 RELEASE FILM

HK4600 is a release film produced by the cast film process. HK4600 has a remarkable and unique combination of transparency and resistance to heat and chemicals. It, therefore, can be used in a large variety of applications.

HK4600 has been studied in depth and is now being used in the following procedures:

- As a release film for aircraft parts, (carbon fiber or polyamide fiber), epoxy, multilayered flexible printed circuit boards, and decorative laminated sheets.
- HK4600 can also be used as a gas separating membrane, as a carrier for ceramic slurry, as a process paper for urethane-based synthetic leather, and as speaker cone paper.

SPECIFICATIONS

| | |
|---------------------------|-------------------------|
| Thickness: | .002" - Standard |
| Width: | 86.5" Max. |
| Color: | Clear |
| Transparency: | 94% |
| Maximum Use Temp: | 400° F (204° C) |
| Melting Point: | 464° F (240° C) |
| Flammability: | Self Extinguishing |
| Specific Gravity (GR/CC): | .846 |
| Elongation (at .001"): | over 300% |
| Yield (at .001"): | 227 SF/lb |
| Shrinkage: | 2.5% at 400° F (204° C) |
| Resistance to Moisture: | Excellent |
| Chemical Resistance: | Excellent |

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DATA SHEET

HK4600P (PERFORATED) RELEASE FILM

HK4600P RELEASE FILM is a perforated film produced by the cast film process. HK4600P has a remarkable and unique combination of transparency and resistance to heat and chemicals.

SPECIFICATIONS

| | |
|---------------------------|------------------------------|
| Thickness: | .002" - Standard |
| Width: | 86.5" Maximum |
| Color: | Clear |
| Transparency: | 94% |
| Maximum Use Temperature: | 400° F (204° C) |
| Melting Point: | 464° F (240° C) |
| Flammability: | Self Extinguishing |
| Specific Gravity (GR/CC): | .846 |
| Elongation (at .001") | 300% |
| Yield (at .001") | 227sq ft./lb. |
| Shrinkage: | 2.5% at 400° F (204° C) |
| Resistance to Moisture: | Excellent |
| Chemical Resistance: | Excellent |
| Perforations: | See Perforation Pattern Life |

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DATA SHEET

A5199 RELEASE FILM

A5199 Release Film can be used for most applications in the printed circuit and lamination industry. A5199 Release Film was developed to address the needs of this demanding process and to provide the user with a functionally superior product that is environmentally safe. The film was designed to remain very flexible under all pressing conditions and will not crack or melt during most applications. It can be used against copper, stainless steel, aluminum, prepreg (both cured and "B" stage) and oxidized copper surfaces.

A5199 Release Film does not shrink, assuring a stable multilayer and laminate package. It reduces wrinkling of copper foil. The film remains flexible and will not become brittle, even at temperatures above 400°F (204°C). The film is static-free which assures clean and uniform lamination without static cling and easy releases. A5199 remains smear and scum free which eliminates contamination of plates which reduces unnecessary down-time for cleaning.

The film is odorless with no offensive or hazardous gases emitted. It is environmentally safe and can be incinerated or disposed of in a landfill.

SPECIFICATIONS

| | |
|-------------------------------------|-----------------------------|
| Thickness: | .001" |
| Width: | up to 51" ** |
| Color: | Hazy Transparent |
| Use Temperature: | 400°F (204°C) |
| Operating Pressure at 400°F (204°C) | Approx 370 – 380 PSI |
| Operating Time at 400°F (204°C) | 2-3 Hours |
| Yield: | 150 sq ft/lb |
| Surface Roughness, µm | 0.94 |
| Tensile Strength, kpsi | MD-20 TD-24 |
| Elongation, % | MD-90 TD-60 |
| Initial Tear Resistance, lb/mil | 2 |
| Release: | Non-reactive to most resins |
| Flammability: | Non Flammable |
| Shelf Life: | Indefinite |

** Other roll widths and cut-to-size can be quoted on request.

NOTE: Technical information furnished by HAWKEYE is based on laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A5299 RELEASE FILM

A5299 Release Film can be used for most applications in the printed circuit and lamination industry when a smooth finished part is desired. A5299 Release Film was developed to address the needs of this demanding process and to provide the user with a functionally superior product that is environmentally safe. The film was designed to remain very flexible under all pressing conditions and will not crack or melt during most applications. It can be used against glass, copper, stainless steel, aluminum, prepreg (both cured and "B" staged) and oxidized copper surfaces.

A5299 Release Film does not shrink, assuring stable multilayer and laminate package. It reduces wrinkling of copper foil. The film remains flexible and will not become brittle, even at temperatures above 350°F (177° C). The film is static-free which assures clean and uniform lamination without static cling and easy releases. A5299S remains smear and scum free which eliminates contamination of plates which reduces unnecessary down-time for cleaning.

The film is odorless with no offensive or hazardous gases emitted. It is environmentally safe and can be incinerated or disposed in landfill.

SPECIFICATIONS

| | |
|------------------|-----------------------------|
| Thickness: | .001" |
| Width: | 16" – 54" |
| Yield: | 150 sq ft/lb |
| Color: | Hazy Transparent |
| Melt Point: | 507° F (265° C) |
| Use Temperature: | 390° F (199° C) |
| Release: | Non-reactive to most resins |
| Flammability: | Non-Flammable |
| Shelf Life: | Indefinite |

** Other roll widths and cut-to-size and tooled panels can be quoted upon request.

NOTE: Technical information furnished by HAWKEYE is based on laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer

DATA SHEET

A5900 RELEASE FILM

A5900 RELEASE FILM is a specially modified TFE with all the advantages of TFE plus superior physical properties and fusion capabilities. A5900 has exceptional electrical and dielectric properties and will conform well to compound contours. The material exhibits excellent impermeability to most corrosive liquids, vapors and gases even at elevated temperature to 650 degrees F (340 degrees C), as well as under pressure and vacuum.

A5900 Release Film has a lower deformation under load, allowing higher pressures to be used.

SPECIFICATIONS

| | |
|--|------------------|
| Thickness: | .001" - Standard |
| Width: | 48" - Standard |
| Temperature (Maximum Recommended): | 650° F (340° C) |
| Shrinkage (1 Hour at 550 degrees F/285 degrees C): | 1/2 of 1% |
| Specific Gravity: | 2.16 |
| Tear Strength: | 0.09 ASTM D-1938 |
| Tensile Strength (psi): | 4,500 |
| Elongation: | 800% |

Note: Technical information furnished by HAWKEYE is based on laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from the handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer

DATA SHEET

A5900P (PERFORATED) RELEASE FILM

A5900P PERFORATED RELEASE FILM is a specially modified TFE with all the advantages of TFE, plus superior physical properties and fusion capabilities. A5900P has exceptional electrical and dielectric properties and will conform well to compound contours. The material exhibits excellent impermeability to most corrosive liquids, vapors and gases, even at elevated temperatures to 650 degrees F (340 degrees C), as well as under pressure and vacuum.

A5900P Release Film has a lower deformation under load, allowing higher pressures to be used.

SPECIFICATIONS

| | |
|--|------------------|
| Thickness: | .001" - Standard |
| Width: | 48" - Standard |
| Temperature (Maximum Recommended): | 600° F (315° C) |
| Shrinkage (1 hr at 550 degrees F/285 degrees C): | 1/2 of 1% |
| Specific Gravity: | 2.16 |
| Tensile Strength (psi): | 4,500 |
| Elongation: | 800% |

NOTE: Technical information furnished by HAWKEYE is based on laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from the handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

A6000 HIGH TEMPERATURE RELEASE FILM

A6000 HIGH TEMPERATURE RELEASE FILM represents a new generation of fluorocarbon polymer release film specifically developed for molding applications involving complex shapes and/or high temperature resins.

A6000 has significantly improved drapability relative to release films typically used for epoxy and other resins cured at temperatures up to 350 degrees F (175 degrees C). In addition, it proves to be the only thermally stable yet high conformable parting film applicable to advanced polyamides such as PMR, and to new thermoplastics. The superior performance of A6000 is based on its outstanding properties in the most critical areas of composite molding.

SPECIFICATIONS

| | |
|-------------------------------------|------------------------|
| Thickness: | .001"/.002" - Standard |
| Width: | 48" |
| Temperature (Recommended Maximum): | 600° F (316° C) |
| Elongation (%): | 450 |
| Tear Strength: (lbs) | 0.10 ASTM D-1938 |
| Tensile Strength at Break (PSI) | 4,500 ASTM D-882-83 |
| Resistance to Tear Initiation (PSI) | 500 ASTM D-1004 |
| Yield Stress (PSI): | 1,400 ASTM D-882-83 |

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DATA SHEET

A2760 RELEASE FILM

A2760 is an inexpensive release film capable of high elongation. A2760 has excellent release properties for continuous cure temperatures of 250°F (122°C). The drapability characteristics of this film makes A2760 an excellent choice when manufacturing with contoured parts. The colored film provides easy identification and removal from parts.

SPECIFICATIONS

| | |
|-----------------|---------------------|
| Thickness: | .001" and .002" |
| Color: | Orange and Natural* |
| Elongation | 750% |
| Tensile Modulus | 2000 |

*Please specify color when ordering

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DATA SHEET

A2760 RELEASE FILM - PERFORATED

A2760 Release Film – Perforated is an inexpensive release film capable of high elongation. A2760 has excellent release properties for continuous cure temperatures of 250°F (122°C). The drapability characteristics of this film makes A2760 an excellent choice when manufacturing with contoured parts. The colored film provides easy identification and removal from parts.

SPECIFICATIONS

| | |
|-----------------|---------------------|
| Thickness: | .001” and .002” |
| Width: | maximum of 120” |
| Color: | Orange and Natural* |
| Elongation | 750% |
| Tensile Modulus | 2000 |

*Please specify color when ordering

NOTE: Technical information furnished by HAWKEYE is based on laboratory findings and is believed to be correct. No warranties of any kind are made except that materials supplied are HAWKEYE standard quality. All risk and liability arising from handling, storage and use of HAWKEYE products, as well as compliance with applicable legal restrictions rests with the buyer.

DATA SHEET

HK3900 RELEASE FILM

HK3900 RELEASE FILM is a cost effective release film used in the fabrication of composite materials. The release properties lend themselves well with most common resins including phenolic, polyester, epoxy, urethane, polyamide, and polyimide. HK3900 has a continuous use temperature of 350°F (176°C)

SPECIFICATIONS

| | |
|---------------------------|--|
| Thickness: | .001" and .002"* |
| Width: | 54" and 60" * |
| Yield: | 20,000 sq in/lb |
| Elongation (%): | 100 |
| Tensile, MD, PSI | 26,000 |
| Shrinkage @ 350°F (176°C) | 2 |
| Resin Release: | Phenolic, Polyester, Urethane, Epoxy Polyamide, Polyimide |
| Color: | Clear |

| | |
|----------------------|---------------------|
| Standard Roll Sizes: | .001" X 54" X 3000' |
| | .001" X 60" X 3000' |
| | .002" X 54" X 1500' |
| | .002" X 60" X 1500' |

* Other widths and thicknesses available on special order

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DATA SHEET

HKJI470

HKJI470 is a tough milky - transparent polyester. This grade is also used for pre-press and stationery applications. This grade is UL approved. The film provides ease of handling, good adhesion and processibility. Some of the uses of this film are insulation in the rotating electrical machines, control tapes, drumheads, duct liners, metallized bases, pressure sensitive labels, protective surfacing and release liners.

| SPECIFICATIONS | | | | | | | |
|--|---------------|--------------------|-------------------|---------|------------------|-------|-------|
| Property | Test Method | Unit | Value | | | | |
| Average Thickness | ASTM-D-374 | Micron | 75 | 100 | 125 | 190 | 250 |
| | | Gauge | 300 | 400 | 500 | 760 | 1000 |
| Thickness Variation | ASTM-D-374 | Micron | +/-2 | +/-3 | +/-3 | +/-4 | +/-5 |
| | | Gauge | +/-8 | +/-12 | +/-12 | +/-16 | +/-20 |
| Yield | ASTM-D-882 | M ² /KG | 9.0 | 7.1 | 5.7 | 3.7 | 2.8 |
| | | Gauge | 6400 | 5000 | 4000 | 2600 | 2000 |
| Tensile Strength At Break | ASTM-D-882 | KG/MM ² | MD | TD | | | |
| | | | 18.0 | 20.0 | (50-125 micron) | | |
| | | PSI | 17.0 | 20.0 | (175-250 micron) | | |
| | | | 25000 | 28000 | (50-125 micron) | | |
| Elongation at Break | ASTM-D-882 | % | 24000 | 28000 | (175-250 micron) | | |
| | | | MD | TD | | | |
| Coefficient of Friction | ASTM-D-1894 | | 90 min. | 80 min. | | | |
| | | | Static | Kinetic | | | |
| | | | 0.45 | 0.40 | | | |
| Optical | | | | | | | |
| Total Luminous Transmission – Thermal | ASTM-D-1003 | % | 75 | 70 | 65 | 60 | 55 |
| Shrinkage @ 150°C 30 minutes | ASTM-D-1204 | % | MD | TD | | | |
| | | | 2.5 | 0.5 | | | |
| Electrical | | | | | | | |
| Surface Resistivity | | OHM/ · | >10 ¹³ | | | | |
| Volume Resistivity | | OHM M | 10 <u>16</u> | | | | |
| Break Down Voltage | ASTM D 149-81 | KV | 13 | 15 | 17 | 21 | 22 |

Notes: 50 micron (200 Gauge), 175 Micron (700 Gauge) & 195 Micron (780 Gauge) are non-standard product and are available under special condition.

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DATA SHEET

HK113 RELEASE FILM

HK113 Release Film is a clear film which has been surface treated to enhance slip and handling. It is used for room temperature cures and de-bulk processes.

SPECIFICATIONS

| | |
|-------------------------------------|-------------------|
| Thickness: | .003", .005" |
| Width: | to 180" (457.2cm) |
| Elongation (%) (ASTM D882) | 150 |
| Tensile Strength (psi) (ASTM D-882) | 1700 |
| Density: (ASTM D-792) | 1.13 |

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