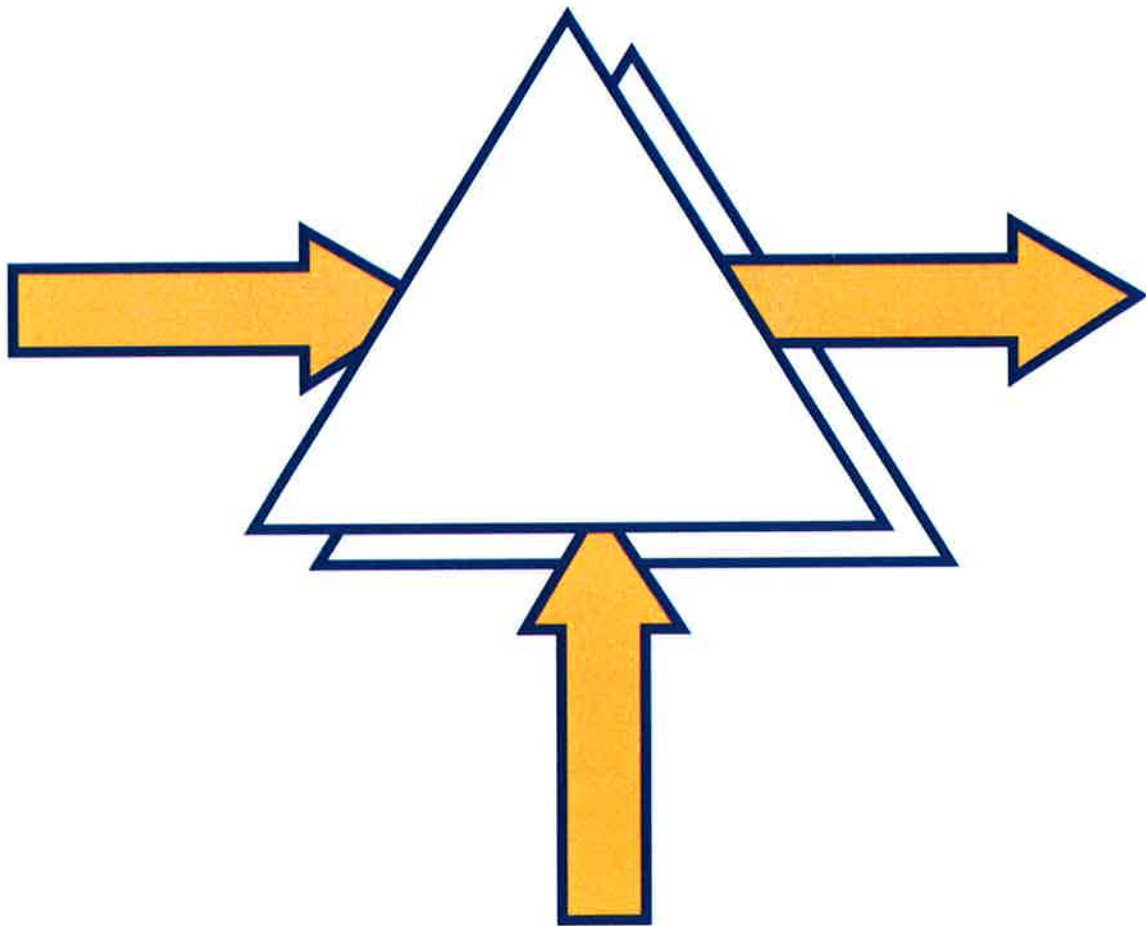


Your Specialist in Ultra Clean Flexible Packaging



CleanRoomProducts GmbH

NEWFORM NV/SA ULTRA CLEAN PROTECTIVE PACKAGING

We Preserve Our Future By Quality

As ISO-9002 certified Flexible Packaging Manufacturer, we aim at providing the highest quality and satisfying those customers requiring more service, more cleanliness, more recyclability and more cost-effectiveness for their marketplace.

S A U B E R
R E I N
S T E R I L

Our constant policy throughout the years of building our technical expertise in sterilization, cleanroom contamination control barrier technology and highly rated static control procedures has earned us international recognition as the European manufacturing specialist offering a complete range of feasible and innovative packaging solutions.

P R O P R E
N E T
S T E R I L E

For more than a decade, various customers from the medical and pharmaceutical to the aerospace and micro-electronic industries worldwide prefer the quality of our packaging products to preserve their future.

Quality control is assured through each step of the operation to manufacture, convert, clean and certify a complete range of ultra clean flexible packaging films and bags to the rigidly low particle counts required by the most stringent American and European standards.

C L E A N
P U R E
S T E R I L E

ULTRA CLEANLINESS IS OUR PARTNER

Ultra Clean Packaging : An Important Choice

The process of producing “ultra clean” parts, components and systems has become an important aspect in the fabrication of many high-technology manufactured products.

To meet its customer's fast moving requirements for ultra clean quality products, Newform's **Cleanroom Packaging Products Division** has made great efforts during the last few years to create working conditions that provide the lowest possible particle counts.

Clean extruded films

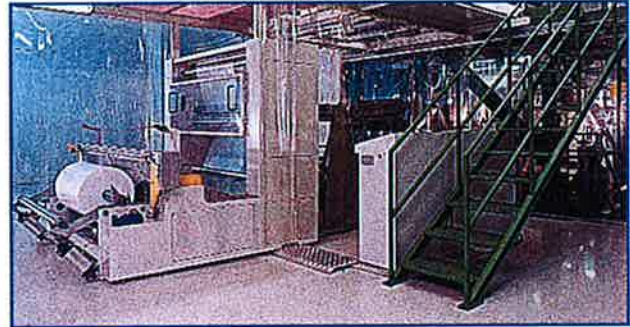
Manufacturing ultra clean plastic film under cleanroom conditions begins with the selection of certified resins and finishes with everything from die design to blown extruded bubble controls. All these steps are critically evaluated to achieve the lowest particle contamination levels.

Cleanliness levels

Cleanliness Level	Range (Surface and Fluids)	Quantity of Particulates
1	1	1
50	5 15 25 50	165 25 7 1
100	15 25 50 100	265 78 11 1
500	50 100 250 500	11800 1100 26 1
1000	250 500 750 1000	1020 40 5 1

Classification of Product Cleanliness Levels According to MIL-STD-1246C

Range : particles categorized per micron size per ft² of significant surface area



Custom design

But there is more, to meet or exceed our customers' fast moving requirements for innovative and reliable packaging solutions, we can blow-extrude special polymers on our mono- or co-extrusion lines to produce ultra clean films that meet exactly the customer's required film performances.

Cleanroom Flexible Packaging Division

The ultra clean extruded films can then be converted to cost-effective and functional ultra clean packaging products. These packaging products are converted by our **Cleanroom Flexible Packaging Products Division** operating its own packaging machinery and cleaning equipment in large cleanrooms, an important part of which critically controlled and operated to Class 100 requirements according to FED-STD-209E.

To meet our customers' satisfaction, the standard visible cleanliness level (Class 10.000) can be upgraded and certified up to our ultra pure level (Class 50) according to MIL-STD-1246C.

Consistent **Statistical Process Control Programs (S.P.C.)** and **A.Q.L.** procedures combined with the stringent **KSC-C-123H** and **MIL-STD-1246C** specifications and all other relevant mechanical requirements that may apply are used to trace the cleanliness of our packaging products and to issue an **official certificate of conformity** to release any batch shipment to our customers.

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Newform nv/sa Ultra Clean Protective Packaging

Ultra Cleanliness is Our Partner

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GOOD PACKAGING PRACTICES®

The Newform philosophy

Since requirements for “clean” products are becoming more stringent by the day, resulting in increasing manufacturing care and cost, it is obvious that clean flexible packaging has become a critical issue in overall clean manufacturing. The direct contact of the packaging bags with the clean products and the impossibility to clean the bag in process requires the same or even a superior cleanliness for the bags as for the packaged material. To **guarantee** a high **quality clean flexible packaging** systematically and reliably, the ISO-9001/9002 certified **quality system** is not satisfactory anymore. Based on Newform’s experience with the pharmaceutical clients, requiring reliable and ultra clean packaging performances, a quality system was put in place inspired by the **Pharmaceutical Good Manufacturing Practices (GMP)**. This is necessary to produce consistently contamination-free products in a coherent and transparent way within a cleanroom environment. To this end, the GMP was adapted for the clean flexible packaging production environment and linked with the existing ISO-9001/9002 quality system, leading into the “**Good Packaging Practices®**”.

Objective

The objective of **GPP®** is the systematic application of a total quality approach to guarantee the process and supply of clean contamination-free products, in accordance to the user’s specifications. Moreover, in order to provide total packaged product quality, a **totally committed co-makership** is required based on a process and product expertise from the user, the end-user or post-processor and the clean flexible packaging manufacturer.

This is why Newform wants to bring in its own expertise and become itself excellent in **Manufacturing , Total quality and Co-makership**. Only this **G.P.P.®** approach can ensure that every user’s process requirement is met by Newform in an excellent way.

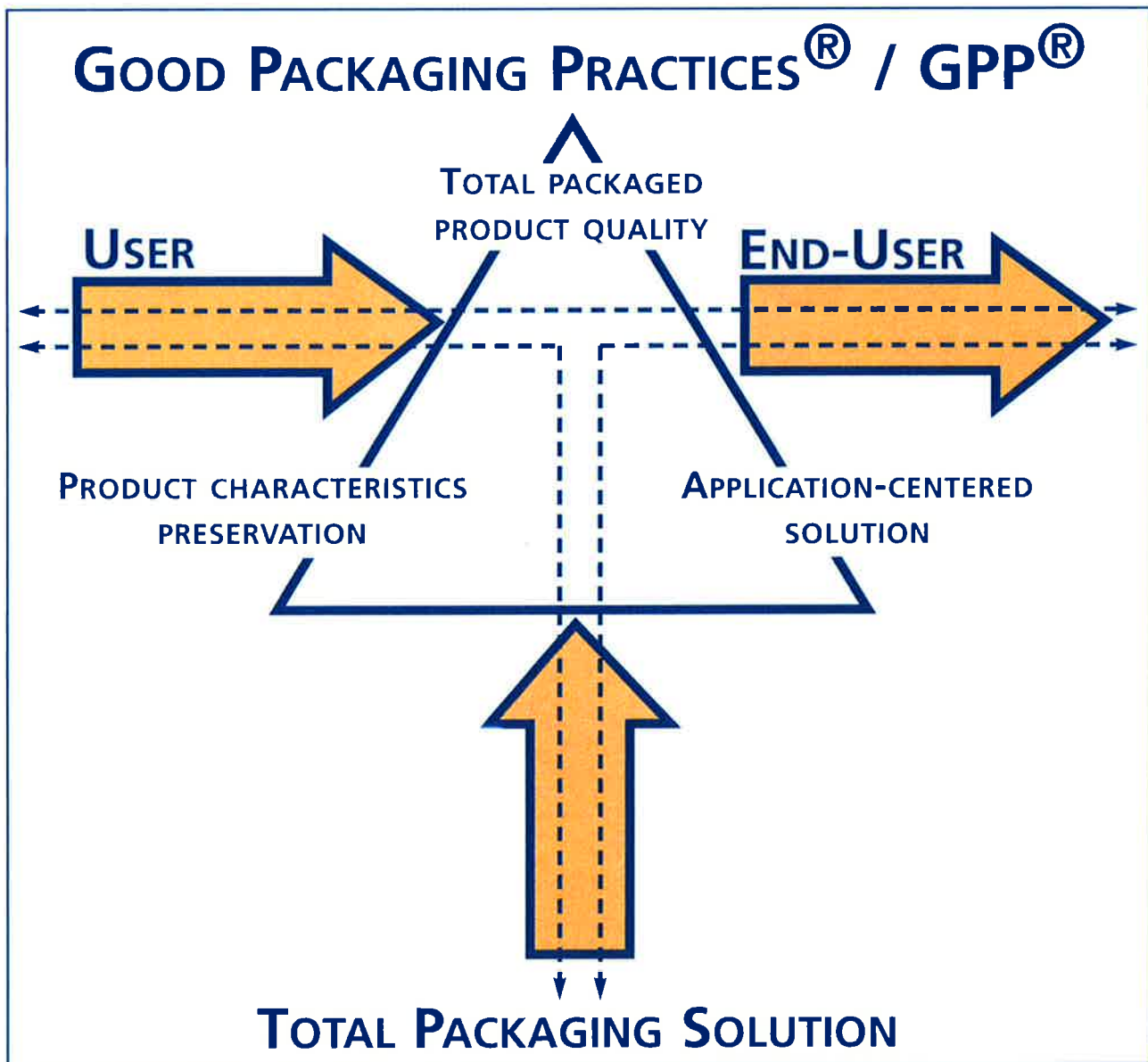
Since no suitable systematic quality system existed to fulfill this apparent need for a total flexible packaging solution, Newform was forced to invent such a system. This has given way to **GPP®** or **Good Packaging Practices®**.

Optimal synergy : all parties involved !

The high value and cost, the sensitivity for the quality of the end product are changing the appreciation of clean flexible packaging. It has become virtually impossible to come up with the right solution for clean flexible packaging unless all critical issues as well up-stream as down-stream are taken in account. An optimal synergy between product, packaging and down-stream processing or application is called for. This cannot be achieved by the packaging manufacturer alone. **Early involvement of all parties concerned** has become indispensable. The **product manufacturer** is better aware of the requirements the product imposes on the packaging. The **end-user** or post-processor is well acquainted with the conditions the product and packaging will have to withstand, and the **clean flexible packaging manufacturer** has all the expertise on the characteristics and the behaviour of the packaging.

In order to ensure consistent high quality, packaging must comply to a uniform set of rules adhered to by all parties concerned.

GPP® is Newform’s registered trademark



Good Packaging Practices® or G.P.P.® has a common objective : to provide an integrated packaging solution, covering all process chain aspects and preserving all critical characteristics of both product and packaging throughout the whole system. In order to make such an integration possible, involvement and efficient communication are required from the user/product manufacturer as well as from the end-user/next processor and the packaging manufacturer/supplier.

The communication of each of these actors should serve a dual purpose. On the one hand to define the needs and requirements concerning the critical parameters and conditions for product and packaging related to their part of the process flow, on the other hand to bring inputs towards new developments, meaning added value to the co-operation between the three actors. Inputs from user/client will be mostly product related, from end-user/post-processor application or process related, from packaging manufacturer related to clean flexible packaging.

ULTRA CLEAN POLYETHYLENE FLEXIBLE PACKAGING

Ultra Clean Regular Polyethylene Bags and Tubing



Description

Polyethylene is the most commonly used flexible packaging film in the industry today. It can be used in a large variety of applications. The film is ideal for standard parts requiring a level of packaging cleanliness compatible with their production's cleanliness.

Our ultra clean Polyethylene packaging products are manufactured under cleanroom Class 100 conditions in our own facility and are certified to level 100 according to MIL-STD-1246C.

Product design

Mono- and multi-layer LDPE, LLDPE and HDPE
 Special grades and blends available
 Peelable and easy-tear films available
 Monitored minute quantity of added process agents
 Available in various shapes : tubing, centerfold, sheets, bags and other specialties upon enquiry
 Standard cleanliness level 100

Also available in "visible clean" Class 10.000 version for less sensitive applications

Newform's ultra clean Polyethylene flat bags

Type flat bags	
LD1F10-0610-XXXX	Width : according Length : to your Thickness : requirements

Standard width :
 Standard length :
 Standard thickness : 0,100 mm

Certified clean to level 100 according to MIL-STD-1246C

Advantages

- Strong puncture resistance
- Flexibility combined with strength
- Co-extruded and pinholes-free Polyethylene
- FDA-approved version available
- Low water vapor transmission rate
- Non-corrosive - Resistant to most chemicals
- Clean double PE packaging
- Easily heat-sealed for bag manufacture
- 100% recyclable
- Certificate of Conformity delivered with every batch (clean to level 100 conform MIL-STD-1246C)

Mechanical Properties

Tensile strength (MD / TD)	1170 / 1230	N / cm ²
Tear strength (MD / TD)	3.0 / 4.0	g / my
Impact strength	250	g
Burst (Mullen)	400 / 660	%
Flammability	Flammable	
Optical	Transparent	
Water absorption, 24 hr	< 0.01	%

Heat Seal

Temperature	120 - 200	°C
Time	0.5 - 1.0	Sec.
Pressure	2.0 - 5.0	Kg/m ²

Temperature Limits

Minimum	- 30	°C
Maximum	+ 70	°C
Melting Point	98 - 115	°C

Chemical Properties

Contact corrositivity	Non-corrosive
Chemical resistance	Resists to most chemicals
FDA-approval	Antistatic PE FDA-qualified number 21. CFR 178.3130.

Newform's ultra clean Polyethylene tubing

Type tubing	
LD1F00-0610-XXXX	Width : according Length : to your Thickness : requirements

Standard width :
 Standard length : 250 lm/roll
 Standard thickness : 0,100 mm

Certified clean to level 100 according to MIL-STD-1246C

ULTRA CLEAN POLYETHYLENE FLEXIBLE PACKAGING

Extremely Pure Polyethylene Bags and Tubing (clean to level 50)



Advantages

- Extremely Pure Polyethylene
- Ideal for sampling of materials to avoid any cross contamination
- Non-corrosive
- Strong puncture resistance
- Resistant to most chemicals
- Absolutely no migration of additives
- No-outgassing
- Precision cleaned to level 50 according to MIL-STD-1246C

Description

Made out of an ultra pure custom-designed polymergrade of polyethylene, these tubings and bags are blown-extruded and manufactured under Class 100 cleanroom conditions in our own facility and after part-cleaning are certified clean to level 50 according to MIL-STD-1246C.

Cleanliness Level Class 50		
Cleanliness Level	Range (Surface and Fluids)	Quantity of Particulates
50	5	165
	15	25
	25	7
	50	1

Classification of Product Cleanliness Levels According to MIL-STD-1246C

Range : particles categorized per micron size per ft² of significant surface area

Newform's ultra pure Polyethylene flat bags

Type flat bags	Width :	according
UP1H10-0610-xxxx	Length :	to your
	Thickness :	requirements

Standard width :
 Standard length :
 Standard thickness : 0,100 mm
 Certified clean to level 50 according to MIL-STD-1246C

Physical Properties		
Thickness	100	micron
Force at Break (MD / TD)	21 / 20	MPa
Elongation at Break (MD / TD)	600 / 800	%
Force at Yield (MD / TD /	12 / 13	MPa
Elongation at Yield (MD / TD)	20 / 20	%
Puncture resistance	5.5	cN / micron
Shore D hardness	52	ISO868

Cleanliness	
Cleanliness level MIL-STD-1246C	Class 50

Heat Seal		
Temperature	120 - 200	°C
Time	0.5 - 1.0	Sec.
Pressure	2.0 - 5.0	Kg/m ²

Temperature Limits		
Minimum	- 30	°C
Maximum	+ 60	°C
Melting Point	95 - 110	°C

Newform's ultra pure Polyethylene tubing

Type tubing	Width :	according
UP1H00-0610-xxxx	Length :	to your
	Thickness :	requirements

Standard width :
 Standard length : 250 lm/roll
 Standard thickness : 0,100 mm
 Certified clean to level 50 according to MIL-STD-1246C

ULTRA CLEAN ANTISTATIC POLYETHYLENE FLEXIBLE PACKAGING

Ultra Clean Pink Antistatic Polyethylene Bags and Tubing



Description

Our pink antistatic Polyethylene packaging products are manufactured - under cleanroom Class 100 conditions and certified clean to level 100 according to MIL-STD-1246C - from a pinholes-free Low Density Polyethylene (LDPE) impregnated with FDA-approved humidity-independent antistats. They are ideal for parts that require a high level of cleanliness combined with antistatic properties.

Standard cleanliness level 100, also available in "visible clean" version for less sensitive applications

Newform's ultra clean pink AS PE flat bags

Type flat bags	
ASRF10-0610-XXXX	Width : according Length : to your Thickness : requirements

Standard width :
 Standard length :
 Standard thickness : 0,150 mm

Certified clean to level 100 according to MIL-STD-1246C

Newform's ultra clean pink AS PE tubing

Type tubing	
ASRF00-0610-XXXX	Width : according Length : to your Thickness : requirements

Standard width :
 Standard length : 250 lm/roll
 Standard thickness : 0,150 mm

Certified clean to level 100 according to MIL-STD-1246C

Advantages

- Eliminates static generation in packaging processes
- Antistatic - does not generate static charges
- Precision cleaned to level 100
- Non-corrosive and amine-free
- Low water-vapor transmission rate
- Easily heat-sealed for bag manufacture
- 100% recyclable, resistant to most chemicals
- Pyrogene-free and FDA-approved
- Certificate of conformity with every delivery
- Strong puncture resistance

Flexibility combined with strength

Product design

- Mono- and multi-layer LDPE,LLDPE and HDPE
- Special grades and blends available
- Peelable and easy-tear films available

Mechanical Properties

Tensile strength (MD /TD)	1170 / 1230	N / cm ²
Tear strength (MD /TD)	3.0 / 4.0	g / my
Impact strength	250	g
Burst (Mullen)	400 / 660	%
Flammability	Flammable	
Optical	Transparent	
Water absorption, 24 hr	< 0.01	%

Heat Seal

Temperature	120 - 200	°C
Time	0.5 - 1.0	Sec.
Pressure	2.0 - 5.0	Kg / m ²

Temperature Limits

Minimum	- 30	°C
Maximum	+ 70	°C
Melting Point	98 - 115	°C

Chemical Properties

Contact corrositivity	Non-corrosive
Chemical resistance	Resists to most chemicals
FDA-approval :	FDA- qualified inder number 21. CFR 178.3130.

Electrical Properties

Surface resistivity		
Exterior layer	$\leq 10^{10}$	Ohm / cm ²
Interior layer	$\leq 10^{10}$	Ohm / cm ²
Electrical static decay time (frm 5kV to 0.5 kV at 15% RH)		
Exterior layer	< 2.0	Sec.
Interior layer	< 2.0	Sec.

ULTRA CLEAN ANTISTATIC POLYETHYLENE FLEXIBLE PACKAGING

Ultra Clean Antistatic Document Holders and Adapted Ring Holders



Description

Our antistatic Polyethylene document holders are manufactured from a natural Low Density PE impregnated with non-corrosive amine-free antistats. These document holders offer the additional advantage to have a non-sticking interior that does ease the insertion of sheet materials. Used to replace all regular document holders in Cleanroom areas. Ideal to protect plans and drawings and to avoid static generation and dust-contamination.

Advantages

- Non-corrosive, amine-free
- Resistant to most chemicals
- Humidity-independent
- Avoid static generation and dust contamination in critical environments
- Custom-sizes available upon request

Pink and transp. antistatic document holders

Item	Format	Colour
CRAS10-A4-04N	DIN A4	Transparent
CRAS10-A3-04N	DIN A3	Transparent
CRAS10-A4-04P	DIN A4	Pink
CRAS10-A4-04P	DIN A3	Pink

DIN A4 & DIN A3 Ring Holders

Item	Format	Back / Rings
CRAS10A4-RH04	DIN A4	50 mm / 4 rings
CRAS10A3-RH04	DIN A3	50 mm / 4 rings

Document holders equipped with 4 holes
Cleaned and packed in Class 100 Cleanroom
Standard ultraclean double packaging
Sold per carton of 500 pieces, ring holders are double packaged per piece

Clean Antistatic Transparent Garbage Bags



Newform's ultra clean transparent garbage bags

Type flat bags	Width :	according
ASNF10-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length :
Standard thickness : 0,050 mm

Certified clean to level 100 according to MIL-STD-1246C

Advantages

- Non-corrosive, amine-free
- Strong puncture resistance
- Low water vapor transmission rate
- Resistant to most chemicals
- Ideal for use under Class 100 Cleanroom conditions

Description

Antistatic Polyethylene garbage bags manufactured from a natural Low Density Polyethylene impregnated with antistats which constantly migrate to the surface forming a sweat layer that increases the material's lubricity thereby minimizing the static generation hazards in cleanroom environments.

These bags allow garbage collection without fear of static generation which may cause damage to devices or promote particle contamination in critical environments.

ULTRA CLEAN NYLON (POLYAMIDE) FLEXIBLE PACKAGING



Description

Nylon (polyamide) is a transparent, tough and heat-resistant thermoplastic with a unique combination of properties. Due to its extremely high heat-resistance and its relatively high water vapor permeability, Newform's nylon packaging is ideally suited for steam sterilization. Furthermore, nylon can be sterilized by gamma radiation techniques.

The bags are ideal for use as primary barriers for packaging electronics, pharmaceutical products and precision bearings and components.

Product design

Regular and antistatic versions available

Transparent

Available in various shapes : tubing, centerfold, sheets, bags and other specialties upon enquiry

Standard cleanliness level 100

Also available in "visible clean" version for less sensitive applications

Newform's ultra clean Nylon flat bags

Type flat bags	Width :	according
NY9F10-0610-XXXX	Length :	to your
	Thickness :	requirements

Newform's ultra clean orange AS Nylon flat bags

Type flat bags	Width :	according
NY4F10-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length :
Standard thickness : 0,050 mm

Certified clean to level 100 according to MIL-STD-1246C

Advantages

- Cleaned and packed in cleanroom class 100
- Extremely high heat-resistance
- Extreme resistance to abrasion, wear and puncture
- Excellent oil, fat and grease-resistance
- Superior gas barrier properties
(low oxygen and nitrogen permeability)

Mechanical Properties

Tensile strength (MD /TD)	9000	p.s.i.
Elongation	300	%
Flammability	Flammable	
Optical	Transparent	
Water absorption, 24 hr	1.3 - 1.9	%
Water Vapor Permeability	7.0	gr/m ² /24hrs
Permeability to oxygen	2.6	cc/100 in ² /24hrs
Permeability to CO ₂	10	cc/100 in ² /24hrs
Colour	Transp./ Transp. Orange	

Heat Seal

Temperature	190 - 232	°C
Time	0.5 - 1.0	Sec.
Pressure	2.0 - 5.0	Kg / m ²

Temperature Limits

Minimum	- 60	°C
Maximum	+ 180	°C
Melting Point	+ 216	°C

Chemical Properties

Contact corrosivity	Non-corrosive
Chemical resistance	Resists most organic and inorganic chemicals Inert to oils, fat, waxes, greases

Electrical Properties

Surface resistivity	<10 ¹²	Ohm/sq.
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Newform's ultra clean Nylon tubing

Type tubing	Width :	according
NY9F00-0610-XXXX	Length :	to your
	Thickness :	requirements

Newform's ultra clean orange AS Nylon tubing

Type tubing	Width :	according
NY4F00-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length : 250 lm/roll
Standard thickness : 0,050 mm

Certified clean to level 100 according to MIL-STD-1246C

ULTRA CLEAN ACLAR AND TEFLON FLEXIBLE PACKAGING

Ultra Clean Aclar Bags and Tubing

Description

Aclar is a High Density fluorocarbon film with excellent water vapor barrier properties, ideal for long term storage of hygroscopic powders and other critical parts. Aclar is a flexible thermoplastic film made from fluorinated chlorinated resins. The fluorine in its structure gives the film an excellent thermal and chemical stability. Aclar is certified by NASA as liquid-oxygen compatible and is one of the best moisture vapor barriers among transparent films.

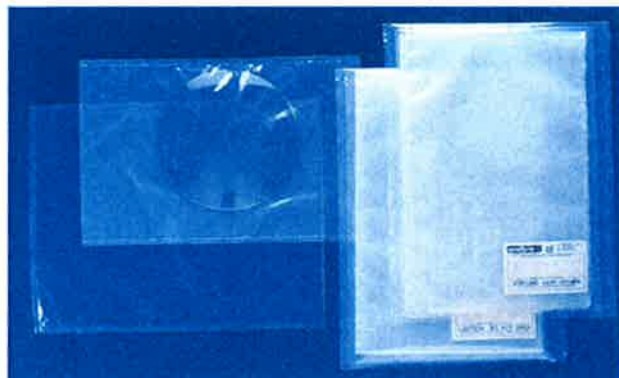
Advantages

- Standard thickness : 0.050 mm
- Cleaned and packed in a cleanroom class 100
- Standard ultra clean double packaging
- Long-term weatherability
- Extremely low permeability to water vapor and nitrogen oxide
- Best transparent moisture vapor barrier film
- Excellent solvent resistance
- Does not crack in extreme cold
- Extremely inert
- Heat-sealable
- Sterilizable by heat, gas and radiation
- Superior electrical insulation properties
- Liquid-oxygen compatible
- Resistant to UV degradation
- Non-flammable

Ultra Clean Teflon Bags and Tubing

Advantages

- Standard thickness : 0.050 mm
- Cleaned and packed in a cleanroom class 100
- Standard ultra clean double packaging
- Long-term weatherability
- Most inert plastic material
- Compatible with liquid oxygen
- High dielectric strength
- Excellent solvent-resistance
- FDA-approved
- Low permeability to liquids, gases, moisture and organic vapors
- Extremely resistant to impact and tearing
- Continuous service temperature



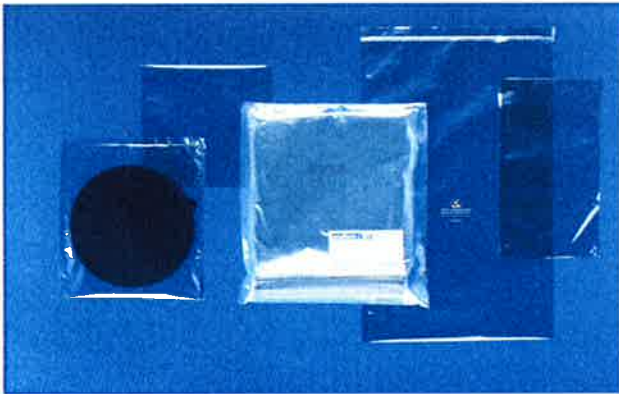
Properties	Teflon		Aclar
Mechanical Properties			
Tensile strength (MD / TD)	2500	p.s.i	4000
Elongation at break MD	170	%	150-250
TD			200-400
Flammability	Non-flamm.		Non-flamm.
Optical	Transp.		Transp.
Impact strength	144	ft.lb/in	
Water absorption, 24 hr	< 0.01		nihil
Water vapor permeability	0.016	gr/M ² /24h	0.43
Specific gravity			2.11
Oxygen index		%	100
Oxygen transmission		mm/m ² /24h	5.9
Co2 transmission		mm/m ² /24h	15.7
Heat Seal			
Temperature	280 - 320	°C	
Time	0.5 - 1.0	Sec.	
Pressure	2.0 - 5.0	Kg/m ²	
Temperature Limits			
Minimum	- 240	°C	
Maximum	+ 205	°C	
Melting Point	260-280	°C	183
Chemical Properties			
Contact corrosivity	Non-corrosive		Non-corrosive
Chemical resistance	Insoluble in most solvents. Most inert plastic material		Insoluble in most solvents and industrial chemicals
Electrical Properties			
Surface resistivity	10 ¹⁶	Ohm/sq.	10 ¹⁶

ACLAR is Allied Signal's registered trademark

TEFLON is DuPont's registered trademark

STATIC SHIELDING AND MOISTURE VAPOR BARRIER FLEXIBLE PACKAGING

Static Shielding Bags and Tubing



Description

Our static shielding bags and tubing are manufactured with a transparent multilayer laminate that combines optimum static shielding with maximum visibility. The inner layer prevents static from generating inside the bag. It is bonded to a metallized polyester layer which provides static shielding of the contents from external sources. The tough abrasion resistant exterior helps the bag maintain its static shielding capabilities even under rugged handling.

Since the bag is transparent, the contents can easily be identified without removal. The bag is also heat-sealable, making it especially suitable for shipment and long term storage.

Product design

Various sizes of bags are available :
from 100 mm * 150 mm up to 1200 mm * 1400 mm
Tubings are also available in various dimensions

Type flat bags	Width :	according
HC2F00-0610-XXXX	Length :	to your
	Thickness :	requirements

Type tubing	Width :	according
HC2F10-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length : 100 Im/roll
Standard thickness : 0,076 mm

Certified clean to level 100 according to MIL-STD-1246C

Advantages

- Faraday-Cage shielding
- Metallized outer surface with high duty protective coating
- High transparency
- Printable
- Easily heat-sealed for bag manufacture
- Low ion-contamination, suitable for use in Class 100 cleanrooms
- Standard cleanliness level 100

Mechanical Properties

Thickness	0.085	micron
Tensile strength (MD /TD)	> 18	lbs / inch.
Tear initiation	> 2.5	lbs / inch.
Tear propagation	> 0.3	lbs / inch.
Puncture resistance	> 100	PSI
Transparency	> 45 %	+/- 5 %
Elongation at break	> 100 %	
Abrasion resistance	> 1000	Rubs
MVTR barrier	< 0.2	gr/100in ² /24 hrs
Oxygen barrier	< 0.5	cc/100 in ² /24 hrs

Temperature Limits

Minimum	- 45	°C
Maximum	+ 80	°C
Melting Point	216	°C

Chemical Properties

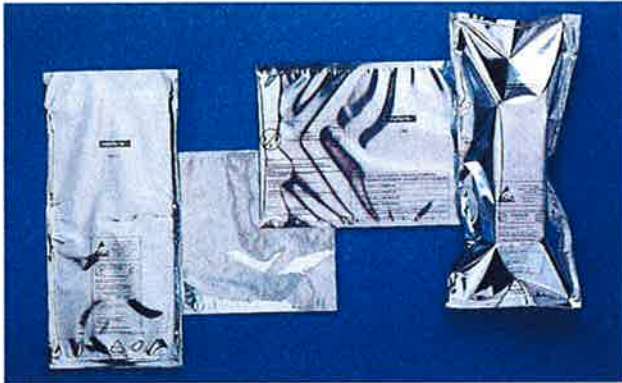
Corrosion	No visible signs
Water absorption	Na
Flammability	Na
<u>Ion Testing</u>	Micro grams / 100 in ²
F (Fluoride)	< 0.1
CL (Chloride)	0.16
NO ₃ (Nitrate)	< 0.1
SO ₄ (Sulfate)	< 0.1
HPO ₄ (Phosphate)	< 0.1
Na (Sodium)	3.0
K (Potassium)	0.68
NH ₄ (Ammonium)	< 0.2

Electrical Properties

Surface resistivity		
Interior layer	< 10 ¹²	Ohm/sq.
Metal layer	< 50	Ohm/sq.
Exterior layer	< 10 ⁷	Ohm/sq.
Electro Static Decay (5000 V. Decay at 12% RH)	< 0.1	Sec.
Capacitive Probe Test	< 10	Volts

STATIC SHIELDING AND MOISTURE VAPOR BARRIER FLEXIBLE PACKAGING

Aluminium Foiled Barrier Bags and Tubing



Description

Our choice of aluminium-foiled moisture barrier films provides an excellent barrier or protection against physical influences such as :

- Corrosion by gases and moisture, acids and salts
- Static electricity
- Radio interference
- Electromagnetic interference
- Particulate contamination
- Heavy-duty environment
- UV - protection

Newform's Barrier Bags Standard

Type flat bags	Width :	according
HRSF00-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length : 100 lm/roll
Standard thickness : 0,099 mm

Certified clean to level 100 according to MIL-STD-1246C

Newform's Barrier Tubing Standard

Type tubing	Width :	according
HRSF10-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length : 100 lm/roll
Standard thickness : 0,099 mm

Certified clean to level 100 according to MIL-STD-1246C

Advantages

- Antistatic
- EMI-RFI shielding
- Non-corrosive
- Cleanroom compatible (class 100)
- Moisture vapor proof compliant with MIL-Standard MIL-B-81075B Type I and MIL-B-131
- Superior vacuum retention
- Bags available in any size upon enquiry
- Special structures offering flame resistance or corrosion inhibition
- Available in printed version upon enquiry

Complete specification-sheet available upon enquiry

Depending upon your needs, we can help you choose a cost-effective solution that will combine the barrier functions that matter most to you. All our foil-laminates are heat-sealable and can be cleaned and converted under cleanroom Class 100 conditions for use in your cleanroom facility.

Newform's Barrier Bags Antistatic

Type flat bags	Width :	according
HR5F00-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length : 100 lm/roll
Standard thickness : 0,099 mm

Certified clean to level 100 according to MIL-STD-1246C

Newform's Barrier Tubing Antistatic

Type tubing	Width :	according
HR5F10-0610-XXXX	Length :	to your
	Thickness :	requirements

Standard width :
Standard length : 100 lm/roll
Standard thickness : 0,099 mm

Certified clean to level 100 according to MIL-STD-1246C

STATIC SHIELDING AND MOISTURE VAPOR BARRIER FLEXIBLE PACKAGING

Antistatic Tyvek/Aluminium Foil Barrier Pouches



Description

Our antistatic Tyvek® / Aluminium-foiled moisture barrier film combines the effect of three film layers of outstanding quality for maximum protection of the most sensitive electronic parts and other static discharge sensitive items.

Constructed of a layer of Tyvek® for strength, a layer of aluminium foil for shielding and moisture vapor proofing and an inner layer of antistatic Polyethylene. The conductive foil layer is between two antistatic layers to prevent shorting or shock to personnel.

Our dry packaging material has been designed to withstand nitrogen flushing, hard shipping and handling procedures in order to offer heavy-duty flexible, electrostatic-free barrier with moisture vapor protection.

Complete specification-sheet available upon enquiry

Advantages

- Heavy-duty, strong puncture resistance
- EMI-RFI shielding
- Humidity independent amine-free antistatic
- Non-corrosive
- Vacuum-sealable
- Cleanroom compatible
- Moisture vapor proof compliant with MIL-Standard MIL-B-81075B Type I and MIL-B-131
- Superior vacuum retention
- Available in ultra clean level 100 version
- Printable
- Available in any size

Mechanical Properties

Yield	3450	Sq. In. / Lb
Breaking strength	47	lbs / inch.
Puncture resistance	24,6	lbs
Water vapor transmission	< 0.02	g / 100in ² /24hrs
Moisture vapor proof	Extr. Low	
Heatseal conditions	160°C/3s/22psi	

Chemical Properties

Corrosion	Non-corrosive
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Electrical Properties

Electromagn. attenuation	45	db
Frequency range	1 to 10	Ghz
Electrostatic properties		
Static decay time from 5kV to 0	< 2	Sec
Surface resistivity	< 10 ¹²	



STATIC SHIELDING AND MOISTURE VAPOR BARRIER FLEXIBLE PACKAGING

Transparent Barrier Pouches

Description

Our transparent barrier electronic packaging films are designed to provide moisture and vapor protection. Various structures are available which exhibit excellent, stable moisture barrier properties and offer an innovative interior film specially designed to minimize seal leakage and ideal for cleanroom applications.

Product design

- Coextruded and laminated structures
- Transparent high barrier constructions with EVOH
- Available in ultra clean version
- Available versions :
 - Standard
 - Static dissipative
 - Static shielding
 - EMI/RFI shielding
 - UV protection

Complete specification-sheet available upon enquiry



Advantages

- Transparent
- Relatively low-cost
- Vacuum heat-sealable
- Cleanroom compatible

Specifications

- Transparent
- Non-corrosive
- Excellent MVTR value
- Excellent puncture resistance

Dry Packaging, Dessicant Bags and Humidity Indicators

Description

A Dry Packaging is a 3-component process :

1. A barrier bag which seals moisture out.
2. A dessicant bag inside the barrier bag to absorb moisture
3. A humidity indicator which indicates 10, 20, 30 and 40% RH.

You know that the SMD is dry and ready for soldering without decohesion of the plastic from the underside of the leadframe die pad.

Newform's [dessicant bags](#) are made out of Tyvek® having the advantage to allow rapid moisture absorption. Tyvek® is highly permeable to water vapor, but yet provides high liquid water holdouts and prevents water from seeping out to damage the package.

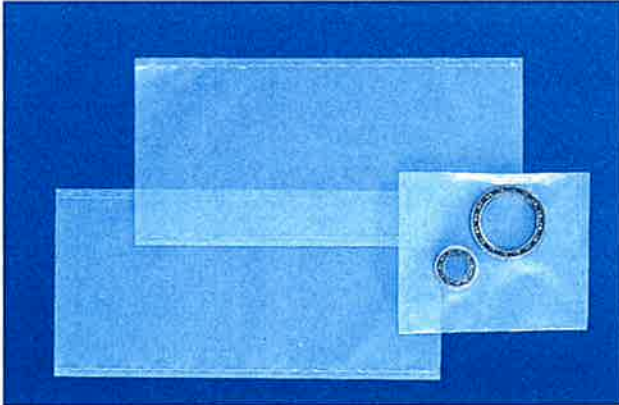
Various sizes /models are available upon request



Our [colour change humidity indicator cards](#), which comply with MIL-L-8835, are designed for use with our dessicant bags and are ideal for use with our dry packaging product line, more specifically for the packaging of surface mounted devices.

Various sizes /models are available upon request

Corrosion Inhibiting Pouches And Laminates



Description

Newform's "Visible Clean Corrosion Inhibition" or "VCCI" technology represents a breakthrough solution in corrosion prevention. Our VCCI products protect metals with a chemically absorbed mono-molecular layer that provides multimetal corrosion protection. The vapor coverage is complete. All surfaces, including crevices, cavities and other inaccessible void areas receive total protection. The VCCI barrier is self-replenishing, even for packaging that is repeatedly opened, and typically protects for up to 24 months. Furthermore the non-reactivity of this product makes it ideal for packaging of Polycarbonate printed circuit boards.

Our vapor corrosion inhibiting bags are ideal for parts that require a sufficient level of packaging cleanliness combined with corrosion-inhibiting properties.

Advantages

- Cost-effective
- Standard visible clean
- Multimetal protection
- Safe for personnel and environment
- Contains no amines, phosphates or chromates
- Moisture-independent
- Antistatic version : eliminates static generation in packaging processes
- Easily heat-sealed for bag manufacture
- 100 % recyclable
- Non-corrosive and amine-free
- Non-reactive with polycarbonates
- Strong puncture resistance
- Flexibility combined with strength
- Low water vapor transmission rate
- Resistant to most chemicals

Product Design

- Standard thickness : 0,150 mm
- Standard clean outer packaging
- Antistatic version available upon enquiry
- Sheets and tubing available in all dimensions between 100 and 3000 mm width
- Bags can be manufactured in all sizes upon enquiry (gusseted liners and big bags are also available)

Easy to use - just wrap or seal your products, and protection is immediate and continuous for storage, transit or overseas shipping.

ULTRA CLEAN COMPRESSION PACKS

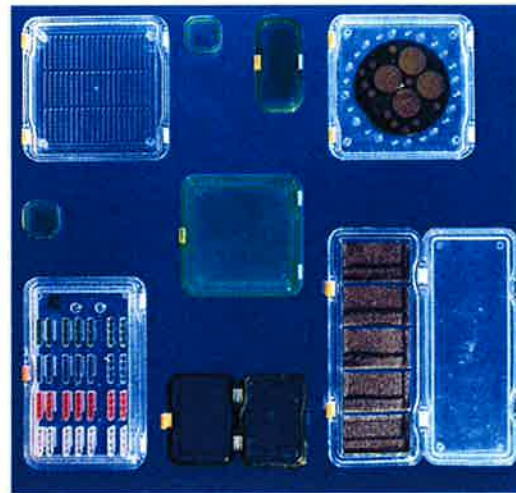
Description

Microelectronic devices must be free of even the most minute particles to prevent shorts, incomplete exposure patterns, defects in masks and pellicles, adhesion problems and a host of other quality defects.

To address this problem Ade's compression packs are the clear choice for high-performance clean cushioned protection. Consisting of two halves made from polystyrene fitted with a very thin polyurethane membrane, these membrane boxes are available in sizes ranging from 39 x 39 x 18 mm to 300 x 300 x 200 mm. They provide fully transparent protection for a wide variety of fragile, valuable products. A clear, conformable elastomeric membrane is sealed to a rigid, transparent plastic container to gently immobilize fragile products and prevent surface damage due to shock or vibration.

This unique combination allows for full visual inspections without exposing the contained product to potential damage due to handling, moisture and contamination. A durable hinge and closure system ensures that the membrane boxes can be used again and again without compromising product or pack integrity.

ADE Europe does not only supply cleanroom Class 100 versions, but also antistatic and standard membrane boxes. Your membrane boxes can be customized to meet your specific packaging requirements. Options include custom sizes and styles, custom imprinting, sterilizable versions, alternate resins and ESD protection, including static-dissipative resins and membranes.



Advantages

- Various sizes from 39*39*18 mm up to 300*300*150 mm
- Special designs upon enquiry
- Ideal for high-value sensitive devices
- Antistatic and regular versions available

Compression Packs® are manufactured by ADE Europe nv., a joint venture company between ADE, Inc. Chicago and Newform nv was founded in 1989 with the aim to manufacture cushioning products for highly sensitive products and to provide both founding Companies with a broader technological scope.

ADE's Quality System is based on the International Quality Standard ISO-9001. ADE, Inc. Is a sustaining corporate member of the American Society for Quality Control (ASQC).

A COMPLETE CATALOGUE IS AVAILABLE UPON ENQUIRY

ULTRA CLEAN STERILIZABLE FLEXIBLE PACKAGING

Ultra Clean Steam-Sterilizable Bags

Ultra Clean Cleansteam®

Description

The Cleansteam® bags are produced by sealing our own co-extruded (pinholes-free) temperature-resistant and translucent High Density Polythylene film to an uncoated vent of Tyvek® 1073B. End-users benefit from product visibility and maximum ease of use in storage and handling.

The disposable and cost-effective Cleansteam® bag made out of DuPont Tyvek® is ideal for the sterile delivery of parenteral packaging components and the terminal sterilization of disposable medical devices. Stoppers, vials and syringe components are kept clean and protected, prolonging shelf life and ensuring sterility upon delivery to filling lines.

Due to the structural integrity and heat-resistance of the Tyvek®, the Cleansteam® bag is autoclavable. Furthermore, the Cleansteam® bag can also be ETO-sterilized as tests show that Tyvek® absorbs significantly less ETO than ordinary medical paper during commercial sterilization cycles.



Advantages

- Steam-sterilizable up to 125°C
- Extremely low particle contamination
- Superior seal & burst strengths
- ETO and gamma sterilizable
- Cleanliness certificate along with delivery
- Clean double packaging per 100 pieces

CLEANSTEAM® is Newform's registered trademark

TYVEK® is DuPont's registered trademark for its spunbonded polyethylene

Newform's Cleansteam® bags	
Type flat bags	
TY4E16P0610-XXXX	Width : according Length : to your Thickness : requirements

Standard width :
 Standard length :
 Standard thickness : 0,100 mm

Ultra clean to level 200 according to MIL-STD-1246C

Mechanical Properties

	Low	High	
Unit Weight	70.8	77.4	g / m ²
Thickness	106	259	micron * m
Tensile (MD)	182	232	N / 25.4 mm.
Elongation	19	28	%
Tensile (XD)	201	298	N / 25.4 mm
Elongation	20	32	%
Mullenburst	1050	1540	kPa
Elmendorf (MD)	2.4	5.4	N
Elmendorf (XD)	2.6	5.6	N
Gurley Airperm.	14	28	s
Bendtsen Airperm.	380	910	ml / min
Hydrostatic Head	155	195	cmH ₂ O



ULTRA CLEAN STERILIZABLE FLEXIBLE PACKAGING

Ultra Clean Steam-Sterilizable Bags

Ultra Clean Easy-Tear Cleansteam®

Description

The Easy-Tear Cleansteam® bag is made out of a co-extruded (pinholes-free) HDPE film sealed to an uncoated vent of Tyvek® 1073B positioned at the bottom of the bag and equipped with an easy-tear opening at the top of the bag. The printed location of the easy-tear notch facilitates the users' work.

Using scissors or other cutting devices under cleanroom and sterile environments, appears contradictory as they generate particles or fibers that, while opening the bag, will be vacuum-attracted to the inner side of the bag and hence contaminate its sensitive content. Newform invented the Easy-Tear Cleansteam® bag to help solve this critical problem.

The Easy-Tear Cleansteam® bag retains all the properties of the Cleansteam® bag, adding the benefit of an easier opening and the possibility to heat-seal the bag on the HDPE-side with standard heat-sealing equipment.

The open HDPE/HDPE bag side is easily heat-sealed after filling and the end-user can easily open the bag without generating particulate contamination by tearing it open at the printed location of the easy-tear notch.



Advantages

- Steam-sterilizable up to 125°C
- Validable heat-sealing technique
- Clean easy-tear opening
- Extremely low particle contamination
- Superior seal & burst strengths
- Also suitable for ETO and gamma sterilization
- Custom dimensions and printing available
- 100 % recyclable

CLEANSTEAM® is Newform's registered trademark

EASY-TEAR CLEANSTEAM® is Newform's european patented trademark

TYVEK® is DuPont's registered trademark for its spunbonded polyethylene



Newform's Easy-Tear Cleansteam® bags	
Type flat bags	
TY4ET6P0610-xxxx	Width : according Length : to your Thickness : requirements

Standard width :
 Standard length :
 Standard thickness : 0,100 mm
 Certified clean to level 200 according to MIL-STD-1246C

Mechanical Properties			
	Low	High	
Unit Weight	70.8	77.4	g / m ²
Thickness	106	259	micron * m
Tensile (MD)	182	232	N / 25.4 mm.
Elongation	19	28	%
Tensile (XD)	201	298	N / 25.4 mm
Elongation	20	32	%
Mullenburst	1050	1540	kPa
Elmendorf (MD)	2.4	5.4	N
Elmendorf (XD)	2.6	5.6	N
Gurley Airperm.	14	28	s
Bendtsen Airperm.	380	910	ml / min
Hydrostatic Head	155	195	cmH ₂ O

ULTRA CLEAN STERILIZABLE FLEXIBLE PACKAGING

Ultra Clean Pinholes-Free Medical Grade Gamma-Sterilizable Bags

Description

Our ultra clean medical-grade Polyethylene bags are made out of a custom-designed pinholes-free Polyethylene grade with outstanding clarity and particle cleanliness to be used for medical and pharmaceutical packaging as well as for intravenous solutions and medical devices, the bags are blown-extruded and manufactured in a Class 100 cleanroom with automated monitoring systems. These ultra clean gamma-sterilizable bags comply with both the European and US pharmacopoeia and a DMF-file is registered at the FDA.

Statement on compliance to medicine contract regulations

We confirm that this product fulfills the requirements on materials used for articles or components of articles intended to come in contact with medicines as regulated in the references to the national regulations :

EU : Council Directive 93/42/EEC (93-06-14)

Council of Europe : Europ. Pharm., 3rd ed (97), suppl (98)

US Pharmacop. : <88> Biol. React. Tests, In-Vivo, plast. cl VI

FDA : File number DMF 8124 (USA), DMF 9011 (Canada)

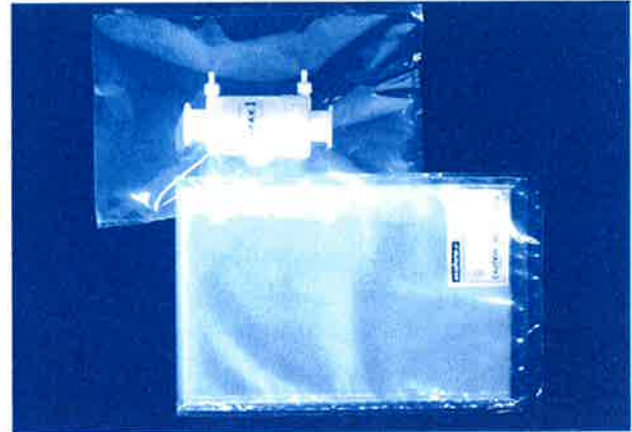
Newform 's medical grade flat bags		
Type flat bags	Width :	according
	Length :	to your
MP1H10-0610-xxxx	Thickness :	requirements

Standard width :

Standard length :

Standard thickness : 0,100 mm

Certified clean to level 50 according to MIL-STD-1246C



Advantages

- Ultra Pure Polyethylene with outstanding clarity
- FDA-approved
- Conform to European and US-Pharmacopoeia
- Gamma-sterilizable
- Ultra clean to level Class 50 according to MIL-STD-1246C
- Ideal for sampling of materials, IV-solutions or sensitive medical devices packaging
- No-outgassing

Physical Properties

Thickness	100	micron
Force at Break (MD / TD)	22 / 22	MPa
Elongation at Break (MD / TD)	700 / 900	%
Force at Yield (MD / TD /	13 / 13	MPa
Elongation at Yield (MD / TD)	22 / 24	%
Puncture resistance	6.0	cN / micron
Shore D hardness	52	ISO868

Cleanliness

Cleanliness level MIL-STD-1246C	Class 50
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Heat Seal

Temperature	120 - 200	°C
Time	0.5 - 1.0	Sec.
Pressure	2.0 - 5.0	Kg / m ²

Temperature Limits

Minimum	- 30	°C
Maximum	+ 65	°C
Melting Point	95-120	°C