



Ease of Use Rigid Packaging Guide | FILMS & POUCHES

TABLE OF CONTENTS

Introduction

Ease of Use Products & Packaging	4
Intuitive Design Applied Research Institute & Dr. Fain	5
Partnership	6
High-Level Considerations: Issues & Recommendations	7

SELECTED COMPONENTS of Films & Pouches

Overview	8
Twist Ties	9
Bag Clips	17
Zopper Pouches	23
Spout Pouches	35
Shrink Films	42

Index

50
50
51
52
53

INTRODUCTION

In the United States, arthritis is the #1 cause of disability, affecting nearly 60 million adults and hundreds of thousands of children. This complex disease can cause chronic, debilitating pain — and make daily activities difficult to do — while also impacting physical and social wellness and mental health. People of all ages, races and sexes live with arthritis.

Arthritis symptoms include pain, stiffness, swelling and diminished range of motion in joints. Symptoms vary, from mild to severe, and may come and go, getting progressively worse over time. Arthritis can also cause permanent joint damage, often leading to immobility. In addition, arthritis can affect the heart, lungs, kidneys, eyes, skin and other organs.

For almost eight decades, the Arthritis Foundation has led the way in supporting people with arthritis and their caregivers. As the largest nonprofit organization focused on arthritis and related conditions, we've played a key role in the development of groundbreaking arthritis treatments — and have successfully advocated for policies and laws that make health care more accessible and affordable for arthritis patients.

We also create life-changing resources that help patients take control of their disease. And we nurture a vibrant, caring community where they can connect with others and know they're not alone.





EASE OF USE PRODUCTS AND PACKAGING

The Arthritis Foundation's Ease of Use Certification program recognizes products and packaging that have been tested, approved and certified as easy to use for people who live with arthritis and chronic pain.

Consumer products and packaging are often not designed to meet the needs of those challenged by arthritis and chronic pain. When easy-to-use designs are implemented, products and packages are made easier to use for the arthritis community, which means they are easier to use by everyone.

Each product and package considered for Ease of Use is first independently tested by the Intuitive Design Applied Research Institute (IDARI). Upon receiving a favorable review, they are then eligible to license the Ease of Use Certified seal, which may be incorporated in all marketing initiatives as a shelf differentiator, in both retail and e-commerce, as well as become part of the Arthritis Foundation's Ease of Use annual marketing strategy.



Did You Know? 72% of consumers said they would switch brands if a product/package was certified as Ease of Use Certified. - Nielsen Ease of Use Survey 2016

Both the consumer and corporate sectors are gaining great value in updated designs of products and packages that are easy to use. Carrying the seal, brands like Pilot[®] Pen, Nexium, Advil[®], Duracell[®], IMAK[®], SafeStep and others are seeing sales that outpace their competition. Many brands use the seal in presentations and buyer meetings, along with marketing in print, digital and television.

People living with arthritis and chronic pain also make shopping decisions when they see the item has been certified as easy to use. Easier to use designs are easier for everyone, whether living with chronic pain or not, and often become a shelf differentiator.

"I trust all products that are labeled Ease of Use. My absolute favorite that I use the most is the Advil[®] Easy Open Arthritis Cap. I've had arthritis for almost 20 years, and I've always struggled to open a medicine bottle cap. Advil made it so much easier. My second favorite is the Ezy Dose[®] Pill Organizer. This helps me organize my meds and have easier access to them, despite any pain I may have in my hands. I'm grateful for the partnerships the Arthritis Foundation has made to create products that make life easier with arthritis."

-Ashley Nicole, autoimmune health coach and master trainer, diagnosed with rheumatoid arthritis at age 27

Intuitive Design Applied Research Institute

The Intuitive Design Applied Research Institute (IDARI), assists in identifying user needs and scientifically evaluating consumer product and packaging solutions. IDARI offers many research and evaluation services, specializing in objectively measuring human performance that delivers key insights. This, in turn, drives innovation — especially for the needs, aspirations and latent demands of consumers dealing with arthritis, chronic pain and other functional limitations.

IDARI serves as the official consumer product Ease of Use test lab for the Arthritis Foundation. A favorable evaluation by IDARI qualifies the manufacturer for inclusion in the Arthritis Foundation's Ease of Use Certification program.

Dr. Brad Fain, IDARI founder and Georgia Tech Regents' Researcher, has more than three decades of experience researching human factors engineering and design. From Ease of Use evaluation and universal design studies to ethnographic research and consumer product design, Dr. Fain founded IDARI to conduct usability and accessibility testing for the Arthritis Foundation and other entities across the globe. At Georgia Tech, his research has spanned projects for the U.S. Department of Defense to manufacturers of critical health systems. He established the Accessibility Evaluation Facility at Georgia Tech, which performs objective accessibility evaluations of workplace information technology for both industry and government customers. Learn more about Dr. Fain and his research at idarinstitute.com.









Dr. Brad Fain



PARTNERSHIP

The Arthritis Foundation is the largest nonprofit organization dedicated to the prevention, control and cure of America's No. 1 cause of disability. The Arthritis Foundation champions the fight to conquer arthritis through life-changing science, resources, advocacy and community connections. Taking diversity, equity and inclusion very seriously, the Arthritis Foundation strives to empower all people with arthritis to live a better lifestyle and remove barriers that limit quality of life. As the leading expert in Ease of Use design certification, the Arthritis Foundation helps generate more than \$100 million in annual sales of products and packages carrying the Ease of Use seal.

Target is one of America's leading retailers and an iconic brand with a single purpose: to help all families discover the joy of everyday life. Diversity, equity and inclusion are part of Target's core values, shaping culture and driving business. At the heart of this endeavor is the Owned Brand Product Design & Packaging organization. This team designs and engineers products and packaging for an industry-leading portfolio of over 45 Target-owned brands. Inclusive design and accessibility improvements have been long-term goals of this team. Target collaborates with external partners to advance their owned brands portfolio with exclusive designs only found at Target.

This collaborative partnership is driving innovation on product and package designs. The mutual goal is to provide products and packages that are easier to use for people living with arthritis and chronic pain, plus other consumers who are also looking for easy-to-use items. Together, we want to help all families discover the joy of everyday life, driving innovation that leads to life-changing satisfaction.

This Ease of Use Design Guide provides the first guidelines developed in the United States, offering resources for engineers and designers in the requirements definition and design development stage. Our collaboration is leading the way in design accessibility.

This innovative partnership of the Arthritis Foundation, Target and IDARI has been a collaborative effort of industry experts in the Ease of Use design space — with Target funding the research and contributing to the illustrations, photographs and graphic design of these guidelines.



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HIGH-LEVEL CONSIDERATIONS: ISSUES AND RECOMMENDATIONS

Common Issues and High-Level Recommendations

Packaged items are too heavy. People with arthritis can have difficulty holding and transporting heavy items. Items over 5.0 pounds can be difficult to carry with one hand. If items exceed 5.0 pounds, consider adding design elements to facilitate a two-handed hold. Items over 10.0 pounds can be difficult to carry regardless of handle placement.

The linear force required is too high. People with arthritis can experience pain when asked to apply a linear force to a design element. Consider requiring less than 3.0 pounds of linear force for design elements meant to be operated with a single finger or designed to be pinched between two fingers. Consider requiring less than 5.0 pounds of force for design elements that are to be operated by multiple fingers or a palm press.

The rotational force requirement is too high. People with arthritis may have difficulty rotating design elements, such as twist-off closures. The amount of force a user can apply to a rotating design element will depend on multiple factors, such as the diameter, height, coefficient of friction and the knurling pattern of the element. Small-diameter and large-diameter rotating design elements can be particularly difficult to operate. Avoid design element shapes or knurling patterns that directly apply pressure to finger joints during rotation.

Users become fatigued after prolonged usage. Users with arthritis may become fatigued when using products that must be held or actuated repeatedly over a prolonged period. When designing the product for extended use, reduce the number of individual actions required and minimize the amount of effort required for each action.

Use of the product causes joints to be placed in an uncomfortable position or posture. Some products require users to articulate their joints in an uncomfortable position. Whenever possible, design the product to maintain a neutral position of the wrist joint. Do not require users to extend their arms above shoulder height.

Use of the product causes painful pressure across finger joints. Ridges, bumps and other small-radius protrusions along the graspable area of the product can increase pressure along painful finger joints. Ensure that all graspable areas are designed to distribute the load across the entire grasp point so that pressure is not concentrated on individual finger joints.

Use of the product requires an excessive grip span. Some users with arthritis have increasingly diminishing grip strength once the grip span exceeds 2.5 to 3.0 inches. Design graspable items that require user strength to not require excessive grip span.

The product requires the use of a tool. Users with arthritis are more likely to injure themselves if interacting with the product requires a sharp instrument like scissors or a knife. Consider not requiring the use of a tool to open or interact with the product.

Avoid requiring simultaneous actions. Some users with arthritis have difficultly performing two actions at the same time, such as rotating and pinching a closure. If the use of the product requires multiple actions, design the product in a way that those actions can be performed sequentially.

Avoid sharp edges. Sharp edges can create a hazard or may be uncomfortable if users are required to apply force to the edge. Consider rolling metal edges or finishing plastic edges with a dull surface.

OVERVIEW

Films and pouches are a category of packaging that is flexible and usually lightweight. This is a popular and fast-growing category because the packaging can be lighter in weight and lower in cost than rigid packaging. This segment includes bags, bottles, shrink wraps and the secondary components used to secure the films and pouches.

This guide focuses on high-volume films and pouches used in the United States in the early 2020s. This is part of a series of guides covering rigid bottles and bases, rigid components, films and pouches, sealed trays and cards, and boxes and bags. This guide starts with a review of the high-level issues and recommendations across all packaging. Following this section, the guide discusses optimum design guidelines, common issues, and recommendations for films and pouches.

TWIST TIES

Twist ties are a packaging component used to seal bags. They are made from a flexible wire enclosed in a small strip of plastic or paper material. They are wound into a spiral to seal a bag. A user opens a bag with a twist tie by grabbing two ends of the twist tie and rotating them until the tie is unwound. To reseal the bag, the user folds the twist tie around a compressed portion of the bag, grabs two ends of the twist tie, and rotates the ties until they are wound together in a tight spiral.

Examples of Twist Ties



Optimum Twist Tie Design Guidelines

Recommendation Highlights

- Easy to locate twist tie
- Twist direction easy to see
- Number of twists limited to 3
- Use an alternative sealing mechanism such as a bag clip



TWIST TIE ISSUES

Ease of use issues associated with the use of twist ties are primarily associated with the fine motor control required to remove and replace the twist tie and the ability to locate the twist tie on the packaging. Below is a summary of the common issues with each segment. Some people with arthritis may have difficulty manipulating the small ends of the twist tie. People with low vision or low contrast sensitivity may have difficulty locating the twist tie and determining how to remove the twist tie. The following pages have detailed descriptions, population impact considerations and potential solutions for each issue.

1. The twist tie is not easily located

- 1.1. The twist tie is obscured by the packaging.
- 1.2. The twist direction is not easily determined.
- 1.3. The twist tie is easily lost or misplaced once detached.

2. The twist tie requires excessive fine motor control

- 2.1. The twist tie is too small.
- 2.2. The twist tie requires too many twists to open the packaging.

1.1 The twist tie is obscured by the packaging.

Detailed Description: Twist ties that blend in with the packaging can be difficult to locate. Users may attempt to open the packaging in ways that differ from the intention of the manufacturer if consumers are not able to readily identify proper opening procedures. The shape, color and size of the twist tie should be designed to promote easy localization and identification.

Populations Impacted: Low vision

Potential Solutions: Provide a twist tie that extends beyond the packaging. Twist ties obscured by the folds of the packaging may be difficult to locate visually. Consider extending the length of the ends of the twist tie beyond the packaging so they can be easily located.

Provide a twist tie that visually contrasts with the packaging. Twist ties that are similar in color to the surrounding packaging can be difficult to locate visually. Consider providing a twist tie in a color or pattern that contrasts visually with the surrounding packaging.

Provide a thick twist tie that is easy to identify visually. A thick twist tie that is easy to identify visually as a twist tie will assist the user in locating and identifying the proper operation of the twist tie. The thickness of the twist tie will aid in distinguishing the twist tie from surrounding packaging.



1.2 The twist direction is not easily determined.

Detailed Description: Some users may have difficulty determining the proper twist direction to remove the twist tie. The direction of travel for removal can be hard to determine if the twist tie is a small diameter or if the twist tie is tightly wound.

Populations Impacted: Low vision

Potential Solutions: Provide a thick twist tie. The winding direction of a thick twist tie will be easier to determine than a thinner twist tie. Consider increasing the thickness of the twist tie such that the direction of winding is easy to identify visually.

Provide textual or visual opening instructions. Consider providing instructions on or near the twist tie indicating the method of removal of the twist tie. Textual instructions such as "twist clockwise to remove twist tie" or a visual indication of the proper operation of the twist tie may help in the removal of the twist tie.



1.3 The twist tie is easily lost or misplaced once detached.

Detailed Description: Once the twist tie is removed from the packaging, users may lose or misplace the twist tie, making the packaging difficult to reseal. Users may lack the fine motor control to reattach the twist tie once it is fully separated from the packaging.

Populations Impacted: Low vision, low fine motor control

Potential Solutions: Provide a thick twist tie that is easy to identify visually. A thick twist tie is less likely to be misplaced. Consider increasing the thickness of the twist tie such that the twist tie is easy to identify visually.

Provide a twist tie that visually contrasts with the packaging. Twist ties that are similar in color to the surrounding packaging can be difficult to locate visually. Consider providing a twist tie in a color or pattern that contrasts visually with the surrounding packaging and would be easy to locate once the twist tie is separated from the packaging.

Attach the twist tie to the packaging. Provide a twist tie that is integrated into the packaging. Consider affixing the twist tie to the packaging such that it does not fall away from the packaging once it is released.

Increase thickness of twist tie	
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High contrast between the package material and twist tie

2.1 The twist tie is too small.

Detailed Description: Small twist ties can be difficult to manipulate. Twist ties that have a thinner width or do not extend significantly beyond the twisted portion of the twist tie can be difficult to operate by users with diminished fine motor control.

Populations Impacted: Low vision, low fine motor control

Potential Solutions: Provide a twist tie that extends beyond the packaging. Short twist ties can be difficult to grasp and twist. Consider extending the length of the ends of the twist tie beyond the packaging so that they can be easily manipulated.

Provide a thick twist tie. A thicker twist tie may be easier to grasp and manipulate. Consider providing a thicker width twist tie that is easy to grasp.



2.2 The twist tie requires too many twists to open the packaging.

Detailed Description: Repeated actions can cause strain on painful finger joints. Limit the required twisting motions to reduce the chance of fatigue or pain.

Populations Impacted: Fatigue, low fine motor control

Potential Solutions: Limit the number of turns required. Limit the number of twisting motions to no more than three twists.



BAG CLIPS

Bag clips are another packaging component used to seal bags. They are made from a flat sheet of semi-flexible plastic or fiber sheet, usually die cut. They are rectangular in shape with a circular opening and a slit in the center of the rectangle. To use the bag clip, a user twists the end of a bag and slides the wound bag section through the slit in the bag clip until it reaches the circular opening. The pressure of the plastic or fiber material prevents the bag from unwinding.

Examples of Bag Clips



Optimum Bag Clip Design Guidelines

Recommendation Highlights

- Large size
- Easy to see
- Low force requirements
- Not easy to damage



BAG CLIP ISSUES

Ease of use issues associated with the use of bag clips are primarily associated with the fine motor control required to remove and replace the bag clip and the ability to locate the bag clip on the packaging. Below is a summary of the common issues with each segment. Some people with arthritis may have difficulty manipulating bag clips. People with low vision or low contrast sensitivity may have difficulty locating the bag clip. The following pages have detailed descriptions, population impact considerations and potential solutions for each issue.



1. The bag clip is not easily located

- 1.1. The bag clip is obscured by the packaging.
- 1.2. The bag clip is easily damaged, lost or misplaced once detached.

2. The bag clip requires excessive strength or fine motor control

- 2.1. The bag clip is too small.
- 2.2. The bag clip is difficult to remove and replace.

1.1 The bag clip is obscured by the packaging.

Detailed Description: Bag clips that blend in with the packaging can be difficult to locate. Users may attempt to open the packaging in ways that differ from the intention of the manufacturer if consumers are not able to readily identify proper opening procedures. The shape, color and size of the bag clip should be designed to promote easy localization and identification.

Populations Impacted: Low vision

Potential Solutions: Provide a bag clip that extends beyond the packaging. Bag clips obscured by the folds of the packaging may be difficult to locate visually. Consider extending the graspable portion of the bag clip beyond the packaging so it can be easily located.

Provide a bag clip that visually contrasts with the packaging. Bag clips that are similar in color to the surrounding packaging can be difficult to locate visually. Consider providing a bag clip in a color or pattern that contrasts visually with the surrounding packaging.



1.2 The bag clip is easily damaged, lost or misplaced once detached.

Detailed Description: Once the bag clip is removed from the packaging, users may lose or misplace the bag clip, making the packaging difficult to reseal. Users may damage the bag clip during removal, reducing its effectiveness in sealing the bag. Users may lack the fine motor control to reattach the bag clip once it is fully separated from the packaging.

Populations Impacted: Low vision, low fine motor control

Potential Solutions: Provide a large bag clip that is easy to identify visually. A large bag clip is less likely to be misplaced. Consider increasing the size of the bag clip so that it is easy to identify visually.

Provide a bag clip that visually contrasts with the packaging. Bag clips that are similar in color to the surrounding packaging can be difficult to locate visually. Consider providing a bag clip in a color or pattern that contrasts visually with the surrounding packaging and would be easy to locate once the bag clip is separated from the packaging.

Provide a resilient bag clip. Provide a bag clip that is likely to survive multiple attempts to remove and replace the bag clip. Select a material for the bag clip that is not fragile but is easily bendable to facilitate ease of removal and replacement.



Use durable bag material that will not be damaged when removing and replacing the clip

2.1 The bag clip is too small.

Detailed Description: Small bag clips can be difficult to manipulate. Bag clips that are too small to facilitate a key pinch grip can be difficult to operate by users with diminished fine motor control.

Populations Impacted: Low vision, low fine motor control

Potential Solutions: Provide a bag clip that extends beyond the packaging. Small bag clips can be difficult to grasp. Consider extending the length of the bag clip beyond the packaging so that it can be easily grasped.

Provide a wide bag clip. A wide bag clip may be easier to grasp and manipulate. Consider providing a wide enough bag clip to facilitate a key pinch grasp.

2.2 The bag clip is difficult to remove and replace.

Detailed Description: Small bag clips can be difficult to manipulate. Bag clips may require too much force to remove. Users may lack sufficient strength or fine motor control to replace the bag clip after it has been removed.

Populations Impacted: Low vision, low fine motor control

Potential Solutions: Provide a bag clip that extends beyond the packaging. Small bag clips can be difficult to grasp. Consider extending the length of the bag clip beyond the packaging so that it can be easily grasped.

Provide a wide bag clip. A wide bag clip may be easier to grasp and manipulate. Consider providing a wide enough bag clip to facilitate a key pinch grasp.

Limit the amount of force required to remove the bag clip. Limit the amount of linear or rotational force required to release the bag clip from the bag.

Select a bag material that is unlikely to be damaged by the bag clip. Some bag clips may snag and tear the bag during the removal process. If torn, the bag may not be possible to reseal. Provide a bag material that is unlikely to be damaged during removal and replacement of the bag clip.

Arthritis Foundation - Ease of Use Films & Pouches Guide

ZIPPER POUCHES

Pouches are a type of flexible packaging. They are made from sheets of plastic that are cut and sealed with heat, adhesives or a mechanical sealing feature, such as a zipper channel.

Examples of Pouches

Optimum Pouch Design Guidelines

Recommendation Highlights

- Wide grasp points
- Notch for tear strips
- Opening instructions
- Zipper seal location indication
- Wide pouch opening
- Incorporate a zipper closing mechanism

POUCH ISSUES

Users with arthritis may have difficulty opening pouches, resealing pouches, transporting pouches or dispensing products from pouches. Pouches that require tearing or using a tool may be difficult for people with arthritis to open. Some design issues, such as pouches that tear incompletely or pouches that tear in a way that damages the integrity of the pouch, can be exceptionally difficult for people with arthritis to use. Below is a summary of the common issues with each segment. The following pages have detailed descriptions, population impact considerations and potential solutions for each issue.

1. The pouch is not easily opened

- 1.1. The pouch requires the use of a tool.
- 1.2. The method of opening the pouch is not clear.
- 1.3. The force required to tear a tear strip is too high.
- 1.4. The force required to separate a seam is too high.
- 1.5. The package only opens partially or requires multiple attempts.
- 1.6. The tear strip is difficult to grasp.
- 1.7. The sides of a seam seal are difficult to grasp.
- 1.8. Zipper channels are difficult to separate after being resealed.

2. The pouch is difficult to reseal

- 2.1. The pouch is damaged during opening and cannot be resealed.
- 2.2. Zipper channels are not easily located.
- 2.3. Zipper channels require too much force to close.
- 2.4. Zipper channels can become contaminated and difficult to close.

3. The pouch is difficult to transport

- 3.1. The pouch is too heavy.
- 3.2. The built-in handle is too small.

4. The product is difficult to dispense

- 4.1. The pouch opening is too small.
- 4.2. The product is difficult to pour.

1.1 The pouch requires the use of a tool.

Detailed Description: Some pouches are designed to be opened with scissors by cutting below the heat-sealed band. The pouch may feature a resealable zipper channel requiring a more precise cut. People with arthritis may have difficulty accurately using scissors to open the packaging. Use of a tool, such as a knife or scissors, should not be required to access the pouch's contents.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Do not require the use of a tool. Pouches that require cutting with a tool can pose a potential hazard for users with arthritis. Do not require a knife or scissors to open a pouch.

Provide an adequate graspable area on the side of the pouch above and below the tear path. Wide grasp points above and below the tear path reduce the need to use a tool to open the packaging. The grasp points should be at least the size of the adult thumb.

Provide an adequate coefficient of friction on the graspable areas on the side of the pouch, above and below the tear path. High coefficient of friction grasp points above and below the tear path reduce the need to use a tool to open the packaging. The grasp points should be made of a non-slip material or textured to reduce slippage.

Provide a tear strip or tear channel to guide the pouch tear. Unsuccessful or incomplete tears may require the use of a tool to complete the opening of the pouch. Design features used to guide the tear along the intended path of the tear can assist users in successfully completing the tear.

Provide a notch or cutout to initiate opening. A notch or a triangle-shaped cutout on the side of the packaging can assist with the initiation of the tear and reduce the need for the use of a tool.

Limit the amount of force required to initiate and sustain the pouch tear. The pouch material may be difficult to tear and may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to initiate and sustain the tear across the full length of the tear path.

Limit the amount of force required to separate a seam. Seams that are difficult to pull apart may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to separate the seam.

Avoid placing a hole, fold or other obstruction in the tear path. If the user encounters an obstruction in the tear path while opening the pouch, the tear could be deflected, causing an incomplete opening of the pouch. A tool may have to be used to complete the opening. Avoid obstructions in the tear path that might disrupt the tear.

1.2 The method of opening the pouch is not clear.

Detailed Description: Some packages lack labeling or physical affordances indicating the proper opening of the packaging. Users might open the package inappropriately, rendering the resealable features of the package ineffective. Clear indications of proper opening of the pouch should be present.

Populations Impacted: Limited vision

Potential Solutions: Provide clear opening instructions. Opening instructions should be printed directly on the packaging near the location where the user interacts with the packaging to open the pouch. The instructions should be printed in a large font with high contrast.

Provide visual and tactile opening cues. Opening cues, such as grasp points, notches or tear channels, should be easily identifiable via touch or sight. Slits or cuts designed to facilitate opening may be hard to detect and may be overlooked by the user.

1.3 The force required to tear a tear strip is too high.

Detailed Description: Some pouches require the user to tear off the topmost strip of the pouch to access the pouch's contents. The force required to initiate and maintain the tear may be too high for some users.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Limit the amount of force required to initiate and sustain the pouch tear. The pouch material may be difficult to tear and may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to initiate and sustain the tear across the full length of the tear path.

Provide an adequate graspable area on the side of the pouch above and below the tear path. Wide grasp points above and below the tear path reduce the need to use a tool to open the packaging. The grasp points should be at least the size of the adult thumb.

Provide an adequate coefficient of friction on the graspable areas on the side of the pouch above and below the tear path. High coefficient of friction grasp points above and below the tear path reduce the need to use a tool to open the packaging. The grasp points should be made of a non-slip material or textured to reduce slippage.

Provide a notch or cutout to initiate opening. A notch or a triangle-shaped cutout on the side of the packaging can assist with the initiation of the tear and reduce the need for the use of a tool.

Avoid placing a hole, fold or other obstruction in the tear path. If the user encounters an obstruction in the tear path while opening the pouch, the tear could be deflected, causing an incomplete opening of the pouch. A tool may have to be used to complete the opening. Avoid obstructions in the tear path that might disrupt the tear.

1.4 The force required to separate a seam is too high.

Detailed Description: Some pouches require the user to grasp both sides of the pouch and apply force to the seam to separate the sides of the pouch. The force required to open the pouch may exceed the functional capacity of the user.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Limit the amount of force required to separate a seam. Seams that are difficult to pull apart may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to separate the seam.

Provide an adequate graspable area on both sides of the seam. Wide grasp points on either side of the seam reduce the need to use a tool to open the packaging. The grasp points should be at least the size of the adult thumb.

Provide an adequate coefficient of friction on the graspable areas on both sides of the seam. High coefficient of friction grasp points on both sides of the seam reduce the need to use a tool to open the packaging. The grasp points should be made of a non-slip material or textured to reduce slippage.

1.5 The package only opens partially or requires multiple attempts.

Detailed Description: Some pouches that require the user to tear the topmost strip of the pouch may fail to open on the first attempt. In some cases, the tear does not go completely across the top of the pouch, and only a portion of the top of the pouch is removed. Since the tear notch or other opening aids are removed with the initial tear, the pouch can become exceedingly difficult to open. Partially opened pouches may require a tool to complete the pouch's opening.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Provide a tear strip or tear channel to guide the pouch tear. Unsuccessful or incomplete tears may require the use of a tool to complete opening the pouch. Design features used to guide the tear along the intended path of the tear can assist users in successfully completing the tear.

Provide a notch or cutout to initiate opening on both sides of the pouch. A notch or a triangle-shaped cutout on both sides of the packaging can assist users if the packaging fails to tear completely on the first attempt.

Avoid placing a hole, fold or other obstruction in the tear path. If the user encounters an obstruction in the tear path while opening the pouch, the tear could be deflected, causing an incomplete opening of the pouch. A tool may have to be used to complete the opening. Avoid obstructions in the tear path that might disrupt the tear.

1.6 The tear strip is difficult to grasp.

Detailed Description: Lack of texture, inadequate size and a low coefficient of friction can make it difficult to securely grasp the tear strip during removal. Users may not be able to apply sufficient force to be able to open the pouch due to lack of grip.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Provide an adequate graspable area on the side of the pouch above and below the tear path. Wide grasp points above and below the tear path reduce the need to use a tool to open the packaging. The grasp points should be at least the size of the adult thumb.

Provide an adequate coefficient of friction on the graspable areas on the side of the pouch above and below the tear path. High coefficient of friction grasp points above and below the tear path reduce the need to use a tool to open the packaging. The grasp points should be made of a non-slip material or textured to reduce slippage.

Limit the amount of force required to initiate and sustain the pouch tear. The pouch material may be difficult to tear and may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to initiate and sustain the tear across the full length of the tear path.

1.7 The sides of a seam seal are difficult to grasp.

Detailed Description: Lack of texture, inadequate sized grasp points and a low coefficient of friction can make it difficult to securely grasp the sides of the pouch while opening the pouch. Users may not be able to apply sufficient force to be able to open the pouch due to lack of grip.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Provide an adequate graspable area on both sides of the seam. Wide grasp points on either side of the seam reduce the need to use a tool to open the packaging. The grasp points should be at least the size of the adult thumb.

Provide an adequate coefficient of friction on the graspable areas on both sides of the seam. High coefficient of friction grasp points on both sides of the seam reduce the need to use a tool to open the packaging. The grasp points should be made of a non-slip material or textured to reduce slippage.

Limit the amount of force required to separate a seam. Seams that are difficult to pull apart may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to separate the seam.

1.8 Zipper channels are difficult to separate after being resealed.

Detailed Description: The force required to separate the zipper channel may be too high once the zipper channel has been sealed. The pouch may lack adequate grasp points on the pouch to enable separation of the zipper channel.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Provide an adequate graspable area on both sides of the zipper channel. Wide grasp points on either side of the zipper channel reduce the need to use a tool to open the packaging. The grasp points should be at least the size of the adult thumb.

Provide an adequate coefficient of friction on the graspable areas on both sides of the zipper channel. High coefficient of friction grasp points on both sides of the zipper channel reduce the need to use a tool to open the packaging. The grasp points should be made of a non-slip material or textured to reduce slippage.

Limit the amount of force required to separate a zipper channel. Seams that are difficult to pull apart may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to separate the zipper channel.

2.1 The pouch is damaged during opening and cannot be resealed.

Detailed Description: Users may damage the zipper seal while opening the pouch. Zipper seals that pull apart from the packaging or pouch or that are torn below the level of the zipper seal cannot be resealed as intended. Take steps to prevent damage to the zipper seal and reduce the likelihood that the zipper seal will be damaged during opening.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Provide a tear strip or tear channel to guide the pouch tear. Unsuccessful or incomplete tears may require the use of a tool to complete opening of the pouch. Design features used to guide the tear along the intended path of the tear can assist users in successfully completing the tear.

Provide a notch or cutout to initiate opening. A notch or a triangle-shaped cutout on the side of the packaging can assist with the initiation of the tear and reduce the need for the use of a tool.

Limit the amount of force required to initiate and sustain the pouch tear. The pouch material may be difficult to tear and may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to initiate and sustain the tear across the full length of the tear path.

Avoid placing a hole, fold or other obstruction in the tear path. If the user encounters an obstruction in the tear path while opening the pouch, the tear could be deflected , causing an incomplete opening of the pouch. A tool may have to be used to complete the opening. Avoid obstructions in the tear path that might disrupt the tear.

2.2 Zipper channels are not easily located.

Detailed Description: The location of the zipper seal may not be evident from outside the pouch. A visual or tactile indication of the zipper seal's location would help users know how to reseal the pouch appropriately.

Populations Impacted: Limited vision

Potential Solutions: Provide a visual indication of the location of the zipper channel. Consider adding a visual indicator, such as a label or a graphical cue, to indicate the location of the zipper channel.

2.3 Zipper channels require too much force to close.

Detailed Description: The force required to properly engage and disengage the zipper seal may exceed the functional capabilities of some users with arthritis. Limit the amount of force required and provide design features that enable users to securely grasp the packaging to facilitate the operation of the zipper seal.

Populations Impacted: Limited strength

Potential Solutions: Limit the amount of force required to seal a zipper channel. If the amount of force required to pinch the zipper closed is too high, users may fail to properly seal the pouch. Consider limiting the required zipper force to 3.0 pounds or less.

Provide an auditory or tactile cue for zipper closure. Users may continue to exert unnecessary force if they are unsure if the zipper is properly sealed. Consider providing an auditory or tactile cue to indicate when a zipper channel is seated properly.

2.4 Zipper channels can become contaminated and difficult to close.

Detailed Description: The pouch's contents can become lodged in the zipper channel tracks. Clogged zipper channels can cause the zipper seal to become difficult to operate or impossible to completely seal.

Populations Impacted: Limited strength

Potential Solutions: Protect zipper channels from debris. Zipper channels that are clogged may become difficult or impossible to close. Protect zipper channels from filling with debris, especially if the product in the pouch is granular or has granular components.

3.1 The pouch is too heavy.

Detailed Description: People with arthritis who experience limited strength or painful finger joints may have difficulty transporting pouches that exceed 5.0 pounds for long distances. Heavier items that exceed 10.0 pounds may require a two-handed carry.

Populations Impacted: Limited strength

Potential Solutions: Reduce weight of the pouch to below 5.0 pounds. Users may need to use two hands to carry and transport pouches exceeding 5.0 pounds. It is recommended that the packaging not exceed 10.0 pounds, even if it is designed for a two-handed carry.

3.2 The built-in handle is too small.

Detailed Description: Pouches that utilize a handle to assist in transportation of the pouch should be adequately sized to accommodate complete insertion of an adult hand. Handles that are too small can be ineffective or painful to use if they place pressure across finger joints.

Populations Impacted: Limited grip

Potential Solutions: Avoid handle openings that are too narrow. Handle openings that are too narrow may prevent users from fully inserting their hand into the opening.

Avoid handle openings that are not sufficiently wide. Handle openings that are not sufficiently wide may prevent users from fully inserting their hand into the opening.

4.1 The pouch opening is too small.

Detailed Description: If the product is designed to be dispensed by reaching into the pouch to remove an item, the opening of the pouch should be appropriately sized to accommodate the adult hand, or the adult hand and a dispensing aid, such as a utensil or measuring vessel. Small openings may make it difficult to remove the product from the pouch effectively without spilling.

Populations Impacted: Limited grip

Potential Solutions: Provide a pouch opening designed for the insertion of an adult hand, or the adult hand with a dispensing tool. Ensure that the opening of the pouch is sufficient for proper dispensing of the product. The pouch, when fully opened, should accommodate the insertion of the human hand if the product is designed to be removed by reaching into the pouch.

4.2 The product is difficult to pour.

Detailed Description: Pouches containing contents that are intended to be poured directly from the pouch may be difficult to pour due to the design of the pouch. The pouch may not have obvious grasp points necessary for tilting the pouch, or the flow rate of the contents may be difficult to control because of the shape of the pouch opening. The method of dispensing pourable contents should be considered in the design of the pouch.

Populations Impacted: Limited grip

Potential Solutions: Add a nozzle or spout to facilitate pouring. If the product is intended to be poured from the pouch, consider adding a nozzle or spout to the pouch to facilitate pouring.

Add grasp points to facilitate pouring. Visually and tactilely indicate grasp points useful when pouring the contents from the pouch.

Design the pouch to facilitate pouring while standing. If the pouch is heavy, consider adding design elements to the pouch that would enable the pouch to be tilted while standing on a flat surface to facilitate pouring without needing to lift the pouch.

Add design elements that allow the pouch to be tilted on a flat surface

SPOUT POUCHES

Spout pouches are a subset of pouches that have a similar flexible base material with a rigid spout for dispensing. The spout can be placed on the top or side of the pouch.

Examples of Spout Pouches

Optimum Spout Pouch Design Guidelines

Recommendation Highlights

- Easy to grip
- Adequately sized spout
- Low torque for opening
- Easy to pour

SPOUT POUCH ISSUES

Users with arthritis may have difficulty opening, resealing, transporting or dispensing products from spout pouches. Spout pouches that require excessive torque or using a tool may be difficult for people with arthritis to open. Some design issues, such as nozzle caps that are difficult to remove or pouches that are difficult to hold during dispensing, can be exceptionally difficult for people with arthritis to use. Below is a summary of the common issues with each segment. The following pages have detailed descriptions, population impact considerations and potential solutions for each issue.

1. The spout pouch is not easily opened

- 1.1. The spout pouch requires the use of a tool.
- 1.2. The method of opening the spout pouch is not clear.
- 1.3. The force required to remove the nozzle cap is too high.
- 1.4. The force required to remove the inner seal is too high.

2. The spout pouch is difficult to transport

- 2.1. The spout pouch is too heavy.
- 2.2. The built-in handle is too small.

3. The product is difficult to dispense

3.1. The product is difficult to pour.

1.1 The spout pouch requires the use of a tool.

Detailed Description: Some spout pouches may have an inner seal that must be pealed or punctured to access the product. People with arthritis may have difficulty accurately using a knife or other tool to puncture or remove the inner seal. Use of a tool, such as a knife or scissors, should not be required to access the pouch's contents.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Do not require the use of a tool. Pouches that require puncturing or cutting with a tool can pose a potential hazard for users with arthritis. Do not require a knife or scissors to open a pouch. Do not require users to place a tool inside the nozzle in a way that might contaminate the nozzle area or the product.

Limit the amount of force required to puncture or remove the inner seal. The pouch material may be difficult to puncture and may require the use of a tool to open the pouch. Consider requiring no more than 3.0 pounds of force to puncture and remove the seal.

1.2 The method of opening the spout pouch is not clear.

Detailed Description: Some packages lack labeling or physical affordances indicating the proper opening of the packaging. Users might open the package inappropriately, rendering the resealable features of the package ineffective. Clear indications of proper opening of the pouch should be present.

Populations Impacted: Limited vision

Potential Solutions: Provide clear opening instructions. Opening instructions should be printed directly on the packaging near the location where the user interacts with the packaging to open the pouch. The instructions should be printed in a large font with high contrast.

Provide visual and tactile opening cues. Opening cues, such as textures and grasp points, should be easily identifiable via touch or sight.

Provide visual and tactile opening cues, including textures and grasp points

1.3 The force required to remove the nozzle cap is too high.

Detailed Description: Spout pouches often feature a nozzle cap with a built-in seal feature that must be broken to access the pouch contents. The force required to rotate the nozzle cap may be too high for some users.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Limit the circumference of the nozzle cap. Users with arthritis may experience limited strength with excessive grip spans. Some users experience reductions in strength when grip spans exceed 2.5 to 3.0 inches.

Limit the torque required to remove the closure. Excessive torque may make it difficult or impossible for users with arthritis to remove the nozzle cap.

Provide a high coefficient of friction closure grip. Consider using a high coefficient of friction material at the grasp point of the closure or using a knurling pattern that maximizes grip.

Provide a sufficient cap height for grasping. The nozzle cap height should be at least the width of the the adult thumb to support grasping the lid during removal.

1.4 The force required to remove or puncture the nozzle inner seal is too high.

Detailed Description: Some pouches require the user to remove or puncture an inner seal to access the contents. The force required to remove or puncture the inner seal may exceed the functional capacity of the user.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Limit the amount of force required to remove the seal to 3.0 pounds or less. Minimize the amount of force required to remove the seal. Require no more than 3.0 pounds of force to remove the seal when an adequate grasp point is provided, and the user can utilize a key pinch grip to securely grasp the grasp point.

Provide an adequate grasp point for the removal of the inner seal. Consider providing a grasp point that can be easily grasped between the thumb and knuckle using a key pinch grip. The grasp point should extend beyond the seal and be visually apparent to the user.

Do not require the use of a tool. Inner seals that require puncturing with a tool can pose a potential hazard for users with arthritis. Do not require a knife or scissors to remove the inner seal. If appropriate, reduce the amount of force required to puncture the seal to allow users to puncture it with a fingernail. Alternatively, provide a tool to safely puncture the seal without risk to the user.

Ensure the grasp point has a sufficient coefficient of friction. Inner seal grasp points can be difficult to pinch securely without slipping. Consider the use of a texture or high coefficient of friction coating to facilitate a secure grip on the grasp point.

Inner seal removes in one piece. The inner seal can be extremely difficult to remove if it separates into multiple pieces. The remaining pieces not connected to the pull tab may require a tool or fine motor control to remove. The inner seal should be removable in one piece with one continuous motion.

2.1 The force required to remove the nozzle cap is too high.

Detailed Description: Spout pouches often feature a nozzle cap with a built-in seal feature that must be broken to access the pouch contents. The force required to rotate the nozzle cap may be too high for some users.

Populations Impacted: Limited strength, limited grip

Potential Solutions: Reduce weight of the pouch to below 5.0 pounds. Users may need to use two hands to carry and transport pouches exceeding 5.0 pounds. It is recommended that the packaging not exceed 10.0 pounds, even if it is designed for a two-handed carry.

2.2 The built-in handle is too small.

Detailed Description: Pouches that utilize a handle to assist in transportation of the pouch should be adequately sized to accommodate complete insertion of an adult hand. Handles that are too small can be ineffective or painful to use if they place pressure across finger joints.

Populations Impacted: Limited grip

Potential Solutions: Avoid handle openings that are too narrow. Handle openings that are too narrow may prevent users from fully inserting their hand into the opening.

Avoid handle openings that are not sufficiently sized for hand insertion. Handle openings that are not sufficiently sized may prevent users from fully inserting their hand into the opening. Users with swollen knuckles may not be able to fully insert their hand into the opening. The material above the knuckles when the hand is placed in the opening may press against painful knuckles.

3.1 The product is difficult to pour.

Detailed Description: Pouches containing contents that are intended to be poured directly from the pouch may be difficult to pour due to the design of the pouch. The pouch may not have obvious grasp points necessary for tilting the pouch, or the flow rate of the contents may be difficult to control because of the shape of the pouch opening. The method of dispensing pourable contents should be considered in the design of the pouch.

Populations Impacted: Limited grip

Potential Solutions: Add a nozzle or spout to facilitate pouring. If the product is intended to be poured from the pouch, consider adding a nozzle or spout to the pouch to facilitate pouring.

Add grasp points to facilitate pouring. Visually and tactilely indicate grasp points useful when pouring the contents from the pouch.

Design the pouch to facilitate pouring while standing. If the pouch is heavy, consider adding design elements to the pouch that would enable the pouch to be tilted while standing on a flat surface to facilitate pouring without needing to lift the pouch.

Adequately size the nozzle or spout for pouring. Users with arthritis may have poor fine motor control. As a result, they may have difficulty regulating the flow rate of the product. If the nozzle is too small, users may experience discomfort due to the extended time of performing the task. If the nozzle is too large, users may make dispense errors. The required opening will depend on the viscosity of the liquid. Design the opening for a reasonable flow rate given the anticipated user task.

SHRINK FILMS

Shrink films are a type of flexible packaging. They are sheets of plastic that compress over objects when heated and/or stretched. They are used to bundle and protect loose items. Shrink films are a widely used segment of packaging because of their low cost and ability to conform to random sizes and shapes found in natural products, such as food. The sheets of plastic can be engineered for different sizes and weight and have properties to protect from moisture, UV light or other potential damaging forces.

Examples of Shrink Films

Optimum Shrink Film Design Guidelines

Recommendation Highlights

- Grasp points
- Opening instructions
- Tear strip opening feature

SHRINK FILM ISSUES

Most issues with shrink film packaging are associated with opening and transportation. Some shrink film packages are heavy and exceed the functional abilities of many users with arthritis. Clear lift points may not be present. Often, shrink film packages require the use of a tool. Once opened, the structural integrity of the packaging is diminished, and the packaging can be more difficult to transport. Below is a summary of the common issues with each segment. The following pages have detailed descriptions, population impact considerations and potential solutions for each issue.

1. The product is difficult to transport

- 1.1. The product is too heavy.
- 1.2. The product does not have handles or grasp points.
- 1.3. The product, once opened, cannot be easily moved.

2. The product is difficult to open

- 2.1. The shrink film packaging requires the use of a tool.
- 2.2. The packaging does not provide a clear indication of the method of opening.

1.1 The product is too heavy.

Detailed Description: People with arthritis who experience limited strength or painful finger joints may have difficulty transporting containers that exceed 5.0 pounds for long distances. Heavier items that exceed 10.0 pounds may require a two-handed carry.

Populations Impacted: Limited strength

Potential Solutions: Reduce weight of the shrink film packaging to below 5.0 pounds. Users may need to use two hands to carry and transport containers exceeding 5.0 pounds. It is recommended that the packaging not exceed 10.0 pounds even if it is designed for a two-handed carry.

1.2 The product does not have handles or grasp points.

Detailed Description: Handles or clearly indicated grasp points can help people transport heavy packages. The handles or grasp point should be appropriately sized and positioned for stable lifting and transporting of the package.

Populations Impacted: Limited strength

Potential Solutions: Reduce weight of the shrink film packaging to below 5.0 pounds. Users may need to use two hands to carry and transport containers exceeding 5.0 pounds. It is recommended that the packaging not exceed 10.0 pounds even if it is designed for a two-handed carry.

Design the shape of the handle or grasp point to distribute the load across the inner surface area of the handle or grasp point. Pressure points at the load-bearing portion of the handle or grasp point can cause discomfort across painful finger joints. Consider designing the inner surface of the handle or grasp point to distribute the load across the hand.

Design a second grasp point to facilitate a two-handed carry for containers that weigh more than 5.0 pounds. Heavy containers over 5.0 pounds should be designed to be carried using two hands. Grasp points built into the container can be useful when the container needs to be transported as part of the use case.

1.3 The product, once opened, cannot be easily moved.

Detailed Description: Once the shrink film packaging has been opened, the product can be difficult to move because of the lack of structural integrity of the packaging. Users with arthritis may have difficulty lifting or moving the product once the film has been cut or torn.

Populations Impacted: Limited strength, limited fine motor control

Potential Solutions: Add additional packaging to facilitate product transport. Additional packaging may be useful to assist in the transportation of a subset of the products once the outer shrink film packaging has been opened.

Design the shrink film packaging so that it can be opened in a way that preserves the structural integrity of the packaging. Consider adding components to the shrink film packaging so contents can be accessed without damaging the structural integrity of the overall packaging, allowing the packaging contents to be accessed without damaging the structural integrity of the overall packaging, allowing the overall packaging, allowing the user to remove items as needed.

2.1 The shrink film packaging requires the use of a tool.

Detailed Description: Some shrink film packaging may require a tool or sharp object to access its contents. Tool use may be dangerous for people with arthritis, or the user may damage the product due to inappropriate use of a tool. Avoid requiring the use of a tool when possible.

Populations Impacted: Limited strength

Potential Solutions: Do not require the use of a tool. Shrink film packaging that requires being cut with a tool can pose a potential hazard for users with arthritis. Do not require a knife or scissors to remove packaging to release the product.

Provide a tear strip or perforated opening. Where possible, provide a tear strip or perforated opening that allows the user to access the shrink film packaging's contents without a tool. Minimize the amount of force required to open the packaging to 5.0 pounds or less for a full hand pull or 3.0 pounds or less for a fingertip pull.

2.2 The packaging does not provide a clear indication of the method of opening.

Detailed Description: Users may not know how to open the shrink film packaging. Clearly presented opening instructions and visual cues can assist users in knowing how to open the packaging safely.

Populations Impacted: Limited vision

Potential Solutions: Provide clear opening instructions directly on the packaging. Provide high-contrast opening instructions and visual cues directly on the packaging near the point of interaction. Utilize a large font for text-based instructions and contrasting colors for both text-based instructions and visual opening cues.

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