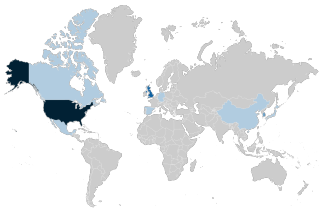
Innovation Score

Innovation Landscape

Title: The invention is to provide a disposable

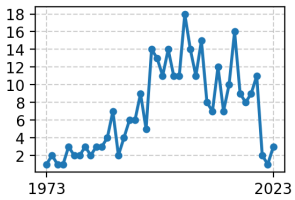
Reference number: 20260623-7370

R&D Activity



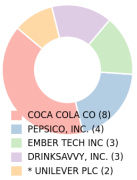
#1 US

Trend Timeline

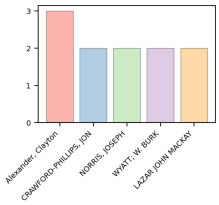


Priority date

Top Companies



Top Inventors



Invention Summary

This invention is a disposable mug featuring an integrated, visible temperature indicator on its exterior. It combines thermal insulation for heat retention with a specialized sensor that allows users to gauge the beverage's internal temperature simply by looking at the outside surface.

Technology Trends

The market shows growth in smart consumables and sustainable packaging solutions. Temperature monitoring is key for safety and user experience, aligning with IoT integration trends in daily household items.

Potential Inventive Features

The core concept involves providing a visual indication of the beverage's temperature through an external mechanism attached to a disposable container. While similar prior art discloses methods for monitoring thermal changes, this invention specifically focuses on integrating such a visible indicator directly into the disposable mug structure itself. The shared technical ground is the principle of non-invasive, external temperature display.

Possible Risks of Dependencies

The core concept involves providing a visual indication of the beverage's thermal state through an external mechanism attached to a container. While related prior art discloses temperature monitoring for beverages, the specific implementation focuses on integrating this visible indicator directly into a disposable mug format. The shared technical ground is the principle of non-invasive, external temperature display for hot liquids.

Drafted Claim Example

A disposable beverage container comprising: a body configured to hold a liquid beverage; and an integrated thermal indicator assembly coupled to the body, wherein the thermal indicator assembly includes a material whose visual property changes in response to the temperature of the liquid beverage within the body; said visual change correlating to a measurable range of temperatures.

Top 3 Possibilities

These patents detail advanced thermal management and identification systems for beverage containers. They focus on integrated cooling reservoirs, temperature monitoring, and enhanced visual differentiation between packaging components for improved user experience and product integrity.

Relevance	Document	Title	Applicant	Priority	Publish
Low	CN102897377 A	Method enabling beverage containers and tablewa...	Tian Zhiyou	2012-09-10	2013-01-30
Low	US6176390 B1	Container lid with cooling reservoir	N/A	1999-08-30	2001-01-23
Low	US2008285621 A1	Insulated retainer with thermometer for beverag...	Rowen Christopher G	2007-05-14	2008-11-20

Top 3 Risks

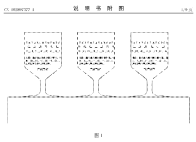
These patents detail advanced thermal management systems for portable containers. They mitigate temperature variability risk by integrating phase change materials and smart indicators, ensuring stable product integrity across diverse operational environments.

Relevance	Document	Title	Applicant	Priority	Publish
High	GB2401176 A	Container with contents temperature indications	Pert Ashley Gerrard	2003-04-30	2004-11-03
High	US2013221013 A1	Thermal receptacle with phase change material	Kolowich J Bruce	1997-04-07	2013-08-29
High	US2017238739 A1	Ch cup (cold and hot drink)	Harder Cornelius	2016-02-18	2017-08-24

CN102897377 A

Method enabling beverage containers and tableware to be not easy to be confused

Possibility



Publication: 2013-01-30
Priority: 2012-09-10
Inventor(s):
TIAN ZHIYOU
Applicant(s):
TIAN ZHIYOU
Link: Espacenet

Reason: The Target Invention focuses on indicating drink temperature via an external, visible indicator. The Reference Patent deals with preventing confusion between beverage containers using complex labeling systems (e.g., zodiac signs, blood types). While both involve differentiating items, the core technical concept of 'temperature indication' is entirely absent from the reference material, making this a novel feature.

Summary: The patent describes methods for preventing confusion when people exchange or mix beverage containers and tableware in social settings. It achieves this by labeling containers with diverse personal attributes (e.g., zodiac signs, blood types, birth dates) to allow users to identify their own items easily, thereby reducing the risk of mixing.

Problem: The primary problem addressed is the high probability of consumers confusing or mixing up their personal beverage containers and tableware when interacting in crowded social environments, which could potentially lead to hygiene issues or misidentification.

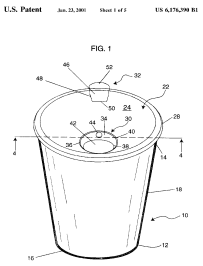
Solution: The solution involves producers applying complex, unique labeling systems—such as combining multiple attributes (e.g., Chinese zodiac, age, blood group)—to the container surface. These labels are designed to be highly individualized and distinguishable from others' containers.

Claim Summary: The invention details methods for preventing confusion by affixing diverse personal attribute labels onto beverage containers or tableware. It specifies using complex labeling systems combining multiple attributes like zodiac signs, ages, and blood groups. The claims also cover various physical mechanisms for applying these unique identifiers to the container surface.

US6176390 B1

Container lid with cooling reservoir

Possibility



Publication: 2001-01-23
Priority: 1999-08-30
Link: Espacenet

Reason: The target invention focuses on a visible indicator of drink temperature, whereas the reference patent describes a physical cooling mechanism. While both address hot beverages, the core technical concept—temperature indication versus active cooling—is distinct enough to suggest non-obviousness in the field. The reference does not teach or suggest using an external visual indicator for temperature monitoring.

Summary: The patent discloses a cup lid designed with an integrated cooling reservoir that attaches to a disposable cup containing hot liquid. This system allows a small volume of the beverage to pass through an opening into the reservoir, thereby actively cooling it down. The design includes specific features like a conical side wall and a closure tab for controlled access.

Problem: The primary problem addressed is the difficulty consumers face when drinking very hot beverages, as they may burn themselves or consume the drink before it reaches a safe, palatable temperature. Traditional lids only prevent spills but do not manage the beverage's thermal state.

Solution: The patent solves this by incorporating a cooling reservoir into the cup lid structure. This reservoir is connected to the main body of the hot beverage via an opening, allowing controlled heat exchange and reducing the drink's temperature before it reaches the consumer for safe sipping.

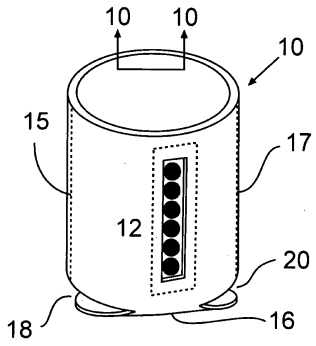
Claim Summary: The invention claims a cup lid with an integrated cooling reservoir that attaches to a disposable cup containing a hot beverage. This system allows the hot liquid to pass through an opening into the reservoir, thereby actively cooling the beverage prior to consumption. The design specifies structural elements like planar top surfaces and conical side walls for controlled heat exchange.

US2008285621 A1

Insulated retainer with thermometer for beverage container

Possibility

Publication: 2008-11-20
Priority: 2007-05-14
Inventor(s):
ROWEN CHRISTOPHER G
Applicant(s):
ROWEN CHRISTOPHER G
Link: Espacenet



Reason: The reference discloses a temperature sensing means attached to a flexible retainer, but the target invention focuses on displaying drink temperature externally via a visible indicator. While both involve temperature sensing and retainers, the core novelty lies in the specific external display mechanism of the mug itself.

Summary: This patent describes a thermally insulating beverage container retainer made from a flexible, stretchable material. The design allows the retainer to be turned inside out without damage. It incorporates a temperature sensing means attached directly or via a second retaining structure to the wall.

Problem: Traditional beverage retainers often lack integrated, visible indicators of the drink's current temperature. Furthermore, designing such a system into a flexible, reusable container while maintaining structural integrity and usability is challenging.

Solution: The patent provides a thermally insulating retainer featuring an attached temperature sensing means. This means can be sewn directly onto the wall or secured using a second retaining structure that includes slots, ensuring both insulation and measurement capability.

Claim Summary: The independent claims cover a thermally insulating beverage container retainer made of flexible material. Key features include having a generally cylindrical body and a bottom section detached to allow it to be turned inside out. The device also incorporates an attached temperature sensing means on the wall.

GB2401176 A

Container with contents temperature indications

Risk

Publication: 2004-11-03
Priority: 2003-04-30
Inventor(s):
ASHLEY GERRARD * PERT
Applicant(s):
PERT ASHLEY GERRARD
Link: Espacenet

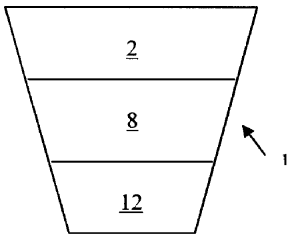


Figure 1a

Reason: The claims require a container with at least two distinct temperature sensitive areas producing visual signals based on predetermined temperatures. Our target invention, a disposable mug showing drink temperature via an external indicator, directly implements this core structure (Claim 1).

Summary: The patent describes beverage containers featuring multiple temperature-sensitive areas that produce visual signals. These signals indicate the suitability of the contents for consumption at various stages or for different user groups (e.g., adults, children). The indicators can be applied as labels, sleeves, or incorporated into the structure.

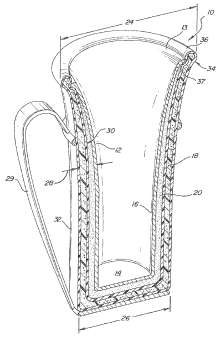
Problem: Traditional methods of determining drink safety and optimal drinking temperature are often subjective or require external tools like thermometers. This creates a need for an integrated, passive system that provides clear, immediate visual feedback on beverage temperature.

Solution: The patent proposes using multiple designated areas within the container to house materials (like thermochromic inks) that change color or display symbols at specific temperatures. This allows the user to visually assess if the contents are safe and ready for consumption.

Claim Summary: The invention claims a container utilizing two or more temperature-sensitive areas to provide visual signals regarding the suitability of its contents for consumption. These indicators can be designed to show different stages of cooling, or specific temperatures suitable for various users. The system can utilize materials like thermochromic inks and may be applied as labels or sleeves.

US2013221013 A1
Thermal receptacle with phase change material

Risk



Publication: 2013-08-29
Priority: 1997-04-07
Inventor(s):
KOLOWICH J BRUCE
BOOSKA RAYMOND
Applicant(s):
KOLOWICH J BRUCE
BOOSKA RAYMOND
Link: Espacenet

Reason: The claims define a liquid receptacle that uses an inner vessel, an outer shell, and a phase change material (PCM) within the interstitial chamber to maintain temperature. This structure directly mirrors the core components described in the target invention's function—maintaining drink temperature via external means. The use of PCM for thermal regulation is highly analogous.

Summary: The patent describes a liquid receptacle designed to rapidly cool and maintain a warm beverage temperature over an extended period. It utilizes an inner vessel, an insulated outer shell defining an interstitial chamber, and a phase change material (PCM) placed within that chamber. The PCM regeneratively absorbs and releases thermal energy to stabilize the liquid's temperature.

Problem: Maintaining beverages at a safe, warm temperature suitable for human contact is challenging because heat transfer occurs rapidly through the container walls into the cooler ambient environment. Traditional insulation methods often fail to sustain warmth over long periods without external power sources.

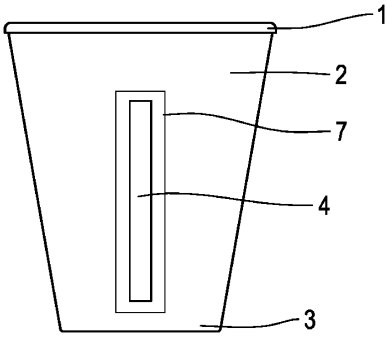
Solution: The invention solves this by incorporating a phase change material (PCM) within an interstitial chamber between an inner vessel and an outer shell. The PCM absorbs excess heat from the liquid when it cools, stabilizing the temperature, and then releases that stored energy back into the liquid as needed.

Claim Summary: The primary claims detail a beverage receptacle comprising an inner vessel and an insulated outer shell defining an interstitial chamber. This chamber contains a phase change material (PCM) which regeneratively absorbs and releases thermal energy to maintain the drink's temperature. The structure is designed for efficient heat transfer and sustained thermal regulation.

US2017238739 A1

Ch cup (cold and hot drink)

Publication: 2017-08-24
Priority: 2016-02-18
Inventor(s):
HARDER CORNELIUS
ENNS JACOB
Applicant(s):
HARDER CORNELIUS
ENNS JACOB
Link: Espacenet



Reason: The target invention directly implements the core structure of Claim 1 by using a disposable container with an external, visible indicator on the side wall. This matches the required components (side wall member, thermally conductive section, and thermal indicator) for temperature display.

Summary: The patent describes a disposable liquid container designed to visibly indicate the beverage's temperature. The key structure involves having a side wall that incorporates a vertically extending, thermally conductive section where a specialized thermal indicator is located.

Problem: Traditional disposable containers lack any mechanism to inform the user about the actual temperature of the contents before consumption, leading to potential burns or disappointment if the drink is too hot or cold.

Solution: The invention solves this by integrating a thermally conductive section into the side wall. This section hosts a thermal indicator (like thermo-chromic material) that changes color or appearance based on the liquid's temperature.

Claim Summary: The primary claim details a disposable container featuring an open mouth, bottom, and side wall, with the side wall containing a thermally conductive section for displaying temperature. Subsequent claims refine this by specifying materials, shapes, and types of thermal indicators.

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