

IMPROVE THAT PERSON DRINK HOT COFFEE WITH PLASTIC CUP



Drinking hot coffee is pleasant, but in a plastic cup it can be harmful.

Plastic cup is cheap what is good for the business.

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START FORMULATION

OBJECTIVE FUNCTION "OF"

ACTION (verb)

Improve

MATTER OF ACTION

that person drink hot coffee with plastic cup

EVALUATED OBJECT "EO"

PERSON

Buy coupon (9) uses

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UNDESIRABLE ASPECTS

TO OBTAIN "OF" WITH "EO" WE SHOULD NOT HAVE "A"

A difficulty to drink hot coffee Impact More

ENTER UNDESIRABLE ASPECTS (hint: undesirable + desirable aspects maximum 5)

Negative effects

WE HAVE "A" BECAUSE WE HAVE

B resistance to handling hot coffee in plastic cup Impact Lower

TRIZ engineering parameter

14.- Strength To evaluate Yes

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WE HAVE "A" BECAUSE WE HAVE

C adaptability to drink hot coffee

Impact: Less

TRIZ engineering parameter: 35.- Adaptability or versatility

To evaluate: Yes

WE HAVE "A" BECAUSE WE HAVE

D risk to drink hot coffee

Impact: Higher

TRIZ engineering parameter: 30.- Object-affected harmful factors

To evaluate: Yes

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WE HAVE "A" BECAUSE WE HAVE

E reliability to drink hot coffee

Impact
Less

TRIZ engineering parameter

27.- Reliability

To evaluate
Yes

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PHYSICAL VARIABLE OR CHARACTERISTIC FOR UNDESIRABLE ASPECTS

WE HAVE "B", "C", "D", "E" BECAUSE WE HAVE "F"

F adverse conditions to drink hot coffee

Impact More

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PHYSICAL VARIABLE OR CHARACTERISTIC FOR DESIRABLE ASPECTS

WE HAVE DESIRABLE ASPECTS BECAUSE WE HAVE G

G adverse conditions to drink hot coffee

Impact Less

ENTER DESIRABLE ASPECTS (hint: undesirable + desirable aspects maximum 5)
Positive effects
Press **Add** button to register positive effects.

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ENTER DESIRABLE ASPECTS (hint: undesirable + desirable aspects maximum 5)

Positive effects

IF WE HAVE "G" WE HAVE

H satisfaction drinking hor coffee with plastic cup

Impact

More

TRIZ engineering parameter

13.- Stability of the object's composition

To Evaluate

Yes

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DESIRABLE ASPECTS

IF WE HAVE "H","I","J" WE HAVE "K", THEN WE HAVE "OF" WITH "EO"

K	<input type="text" value="easy to drink hot coffee with plastic cup"/>	Impact	<input type="text" value="More"/>
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Logical Analysis Summary

Objective Function	Improve that person drink hot coffee with plastic cup
Evaluated Object	PERSON
Physical Variable or Characteristic	adverse conditions to drink hot coffee
With	More adverse conditions to drink hot coffee
We have	More difficulty to drink hot coffee
With	Less adverse conditions to drink hot coffee
We have	More easy to drink hot coffee with plastic cup

TRIZ Engineering Parameters evaluated		
TRIZ Engineering Parameters	Social and Human Context	To evaluate
14.- Strength	PERSON : there are More difficulty to drink hot coffee because there Lower resistance to handling hot coffee in plastic cup Effect : negative	Si No
35.- Adaptability or versatility	PERSON : there are More difficulty to drink hot coffee because there Less adaptability to drink hot coffee Effect : negative	Si No
30.- Object-affected harmful factors	PERSON : there are More difficulty to drink hot coffee because there Higher risk to drink hot coffee Effect : negative	Si No
27.- Reliability	PERSON : there are More difficulty to drink hot coffee because there Less reliability to drink hot coffee Effect : negative	Si No
13.- Stability of the object's composition	PERSON : there are More easy to drink hot coffee with plastic cup because there More satisfaction drinking hot coffee with plastic cup Effect : positive	Si No

AATRIZINVENTOR RESULTS

II. SPECIFIC MATRIX OF WEIGHTED CONTRADICTIONS - CASE IN STUDY

Par. Improve / Attenuate or preserve	Var.	14.- Strength / Resistance	35.- Adaptability or versatility	30.- Object-affected harmful factors	27.- Reliability	13.- Stability of the object's composition	Sum% (Fij)
14.- Strength / Resistance	Fij		WT.16	WT.9	WT.7	WT.3	60%
14	IPs.	0,0,0,0	15,3,32,0	18,35,37,1	11,3,0,0	13,17,35,0	
35.- Adaptability or versatility	Fij	WT.15		WT.6	WT.4	WT.11	54%
35	IPs.	35,3,32,6	0,0,0,0	35,11,32,31	35,13,8,24	35,30,14,0	
30.- Object-affected harmful factors	Fij	WT.9	WT.13		WT.18	WT.1	81%
30	IPs.	18,35,37,1	35,11,22,31	0,0,0,0	27,24,2,40	35,24,30,18	
27.- Reliability	Fij	WT.17	WT.4	WT.8		-	43%
27	IPs.	11,28,0,0	13,35,8,24	27,35,2,40	0,0,0,0	0,0,0,0	
13.- Stability of the object's composition	Fij	WT.14	WT.12	WT.1	-		74%
13	IPs.	17,9,15,0	35,30,34,2	35,24,30,18	0,0,0,0	0,0,0,0	
Sum%(Fij)		30%	50%	89%	43%	100%	

(*) Preferred Parameters : 30 (improve) y 13 (attenuate or preserve)

(*) Preferred Parameters : 30 (improve) y 13 (attenuate or preserve)

III. RECOMMENDED TABLE OF SOLUTION

Solution table	Essencial Contradiction	Supplementary Contradictions with Preferred Parameters (*)			
		14.- Strength / Resistance	30.- Object-affected harmful factors	35.- Adaptability or versatility	30.- Object-affected harmful factors
Eng. Par. to Improve	30.- Object-affected harmful factors	14.- Strength / Resistance	30.- Object-affected harmful factors	35.- Adaptability or versatility	30.- Object-affected harmful factors
Eng. Par. to Attenuate or Preserve	13.- Stability of the object's composition	13.- Stability of the object's composition	14.- Strength / Resistance	13.- Stability of the object's composition	35.- Adaptability or versatility
Weight priority	WT.1	WT.3	WT.9	WT.11	WT.13
IPs. Priority 1	35	13	18	35	35
IPs. Priority 2	24	17	35	30	11
IPs. Priority 3	30	35	37	14	22
IPs. Priority 4	18	0	1	0	31

V. INVENTIVE PRINCIPLES RELEVANT TO SOLUTION

IP.35.- Transformation / Parameter changes of an object (Pos 1):

=> Change PERSON's state physical or chemical (e.g. to a gas, liquid, or solid).

=> Change the composition or condition by adding or removing components from PERSON.

=> Change the concentration or consistency; Change the degree of flexibility; Change the temperature or internal activity level of PERSON.

- Separation principle: Separation by condition to satisfy contradiction // Separation alternative

- Solution strategy: Improving attributes.

IP.24.- Intermediary (Pos 8):

=> Use for PERSON intermediary carrier article or intermediary process.

=> Merge PERSON temporarily with another object (which can be easily removed).

- Separation principle: Separation in space

- Solution strategy: Improving if a solution still hasn't emerged.

IP.30.- Flexible and thin membranes / Simple physical shapes / simple ways (Pos 10):

=> Use for PERSON flexible shells and thin films, simple physical shapes or simple ways to apply, instead of 3-dimensional structures, complex shapes or complicated ways.

=> Isolate PERSON from the external environment using flexible shells and thin films, simple physical shapes or simple ways to apply.

- Separation principle: Separation in space

- Solution strategy: Improving attributes.

IP.18.- Mechanical Vibrations / Energy Variations (Pos 4):

=> Move cyclically PERSON with energies that activate it.

=> Cause PERSON to oscillate or vibrate.

=> Increase its frequency (even up to the ultrasonic).

=> Use an PERSON's resonant frequency. Use piezoelectric vibrators instead of mechanical ones.

=> Use a combination of ultrasonic and electromagnetic oscillations.

- Separation principle: Separation in time

- Solution strategy: Improving' littles.

IP.11.- Beforehand cushioning (Pos 2):

- ⇒ Prepare emergency means beforehand to compensate for the relatively low reliability of PERSON
- Separation principle: Separation in time
- Solution strategy: Improving 'littles'.

IP.13.- Inversion / Opposite Action (Pos 3):

- ⇒ Invert the action (s) used to solve the problem or apply action (s) opposite or indirect to the current action to PERSON
(e.g. instead of cooling an object, heat it; instead of the mountain coming to you, going to the mountain; do not take it by hand, take it with a tool)
- ⇒ Make mobile the fixed parts of the PERSON (or external environment), and fixed parts movable.
- ⇒ Turn PERSON (or process) 'upside down', 'change position', 'change condition'.
- Separation principle: Separation in space // Separation inverse
- Solution strategy: Improving attributes & performance, little change or improving if a solution still hasn't emerged.

IP.27.- Cheap or short-lived objects (Pos 5):

- ⇒ Replace inexpensive PERSON or its action with a multiple of inexpensive objects or actions.
- ⇒ comprising certain qualities of PERSON (such as degree of participation, complexity or service life, for example).
- Separation principle: Separation in subsystem
- Solution strategy: Improving 'littles'.

IP.17.- Another dimension (Pos 6):

- ⇒ Add or remove physical dimensions or characteristics of PERSON.
- ⇒ To move PERSON to new dimensions in the space or areas in which it develops.
- ⇒ Use a multi-story arrangement of objects instead of a single-story arrangement.
- ⇒ Tilt or re-orient PERSON, lay it on its side.
- ⇒ Use the other side of a given dimension or context.
- Separation principle: Separation in space
- Solution strategy: Improving attributes & performance, little change or improving if a solution still hasn't emerged.



END