



*Japan Soap and Detergent
Association*

Defining the Future of Highly Eco-Friendly Washing through Innovation



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Japan Soap and Detergent Association (JSDA)

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Presentation Contents

- Short Introduction of Japan Soap and Detergent Association (JSDA)
- Eco-friendly washing related customs in Japan and the eco-related keyword “Mottainai”
- Technological efforts to enhance the detergency under low temperature and less-water condition
- Epilogue: The basic culture/attitude of Japan and our wider wishes.

JSDA (Japan Soap and Detergent Association)

Outline

- The industry organization:
soaps and detergents manufacturers
their raw material producers of oil and fat products.

Objectives of the constitution of JSDA

- To help develop the oil and fat chemical industries, soap and detergent industries and the related industries.
- To collect the fair opinions and coordinate the collaboration among them.

Foundation

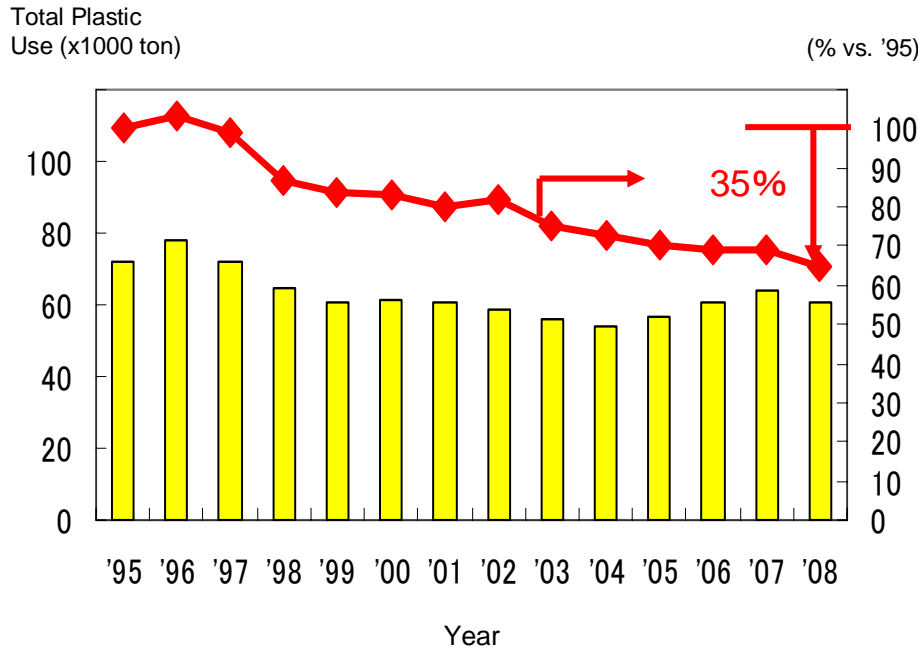
As Japan Soap Association: in September 1950, in Tokyo
Current JSDA organization : activated in 1973.

Member companies

Full membership:23 comps., supporting member:35 comps.

JSDA Key Activities

- Voluntary activity on plastic material reduction: Target -30% vs '95



Result of plastic use reduction

- Total amount vs. 1995:
Reduced by 15 %
- Use per unit volume vs. 1995:
Reduced by 35%

- Development of JSDA GHS guidance

(GHS: Globally Harmonized System of Classification and Labeling of Chemicals)

- provided a Guidance and DVDs to promote the understanding about GHS
- tried to disseminate it in Japan, Asia and APEC countries.

GHS in Japan: planned to be enforced from Jan. 2011 starting with;
hand dishwashing detergents, chlorine bleaches, acid/chlorine cleaner

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Eco-related Trends and Those in Japan

- The concern on the ecology, especially on the global warming is growing globally .

Ex: the “Green New Deal policy” by Mr. Obama, USA

- In Japan, the main ecological issues have been;
the eutrophication of water by phosphorous materials,
hazardous property and biodegradability of chemicals.

Currently, the CO₂ emission has also become the big focus.

- Japanese government : 25% CO₂ gas reduction at COP15
(1990 ⇒ 2020)

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- The washing behavior in Japan has historically been eco-friendly
 - the low temperature washing,
 - line-drying outside (almost no use of dryer machine)
 - reuse of the bath water

based on the high saving consciousness / feeling : “Mottainai”

Insight of “Mottainai”

-“Mottainai (勿体無い)” : from a key word of Buddhism the idea of regrets and the grief over the loss (nai) of materials or matters of their own intrinsic figure (mottai).

Related to the current eco-consciousness / feeling.

-The concept of “Mottainai” today :

“We should not discard materials or matters before we use up all the potential of them which are given from the mother nature or from other people.”

-To represent the total eco-related four meanings of:
Reduce, Reuse, Recycle and Respect

Outline of Eco Activities Related to Washing in Japan

▪ Energy Saving

Low temperature washing, introduction of Inverter motor and heat pump system for drying (the adoption rate of the dryer is ca.50%, however, it is rarely used in order to save electricity)

▪ Water Saving

Reuse of bath water, low bath ratio washing, introduction of shower rinsing system, permeation of drum type machines.

▪ Resource Saving

Concentration and Compaction of Detergents
The use of proper amount of detergents
Popularization of Refills

▪ The Use of Renewable Natural Resources

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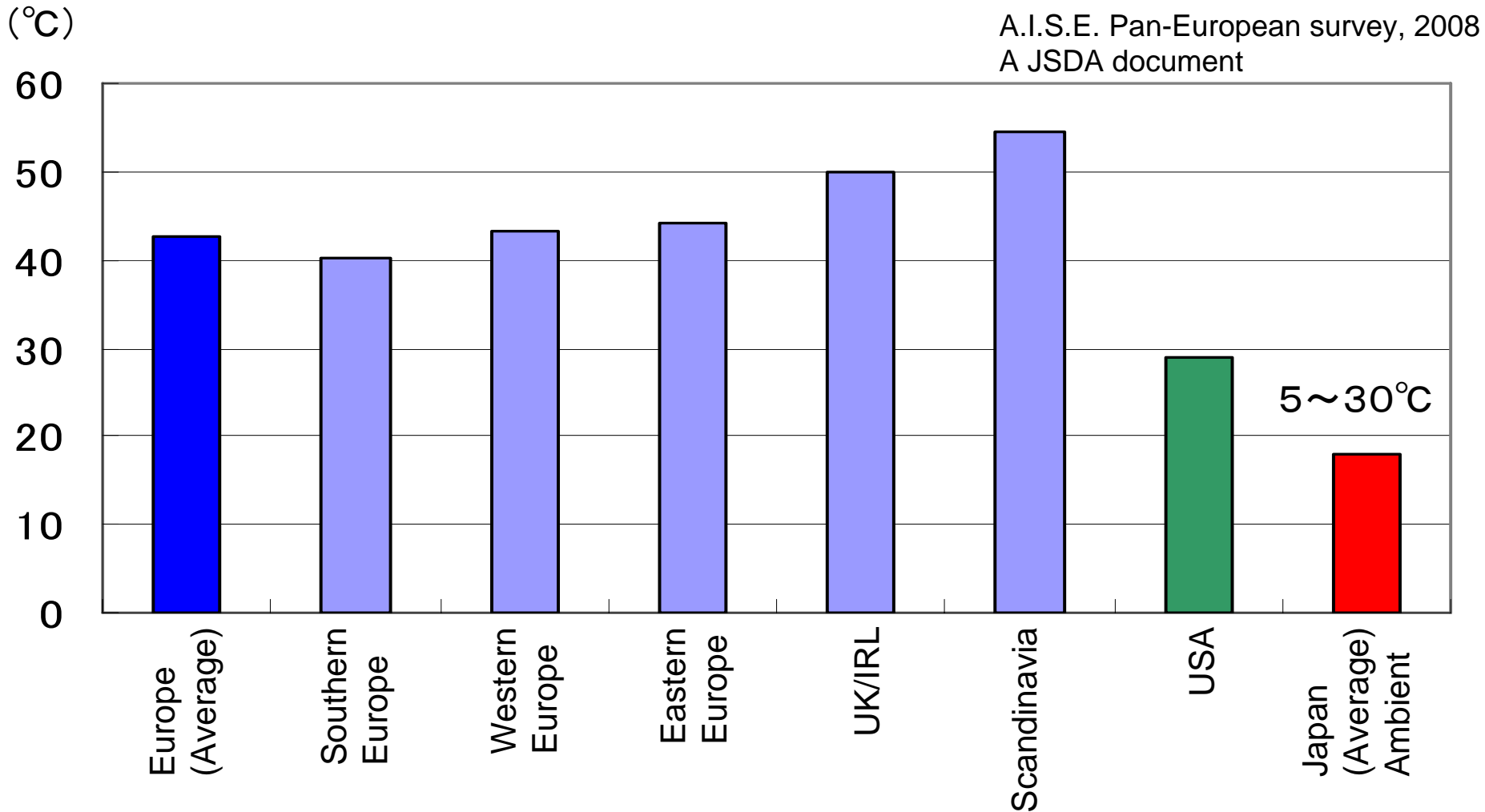
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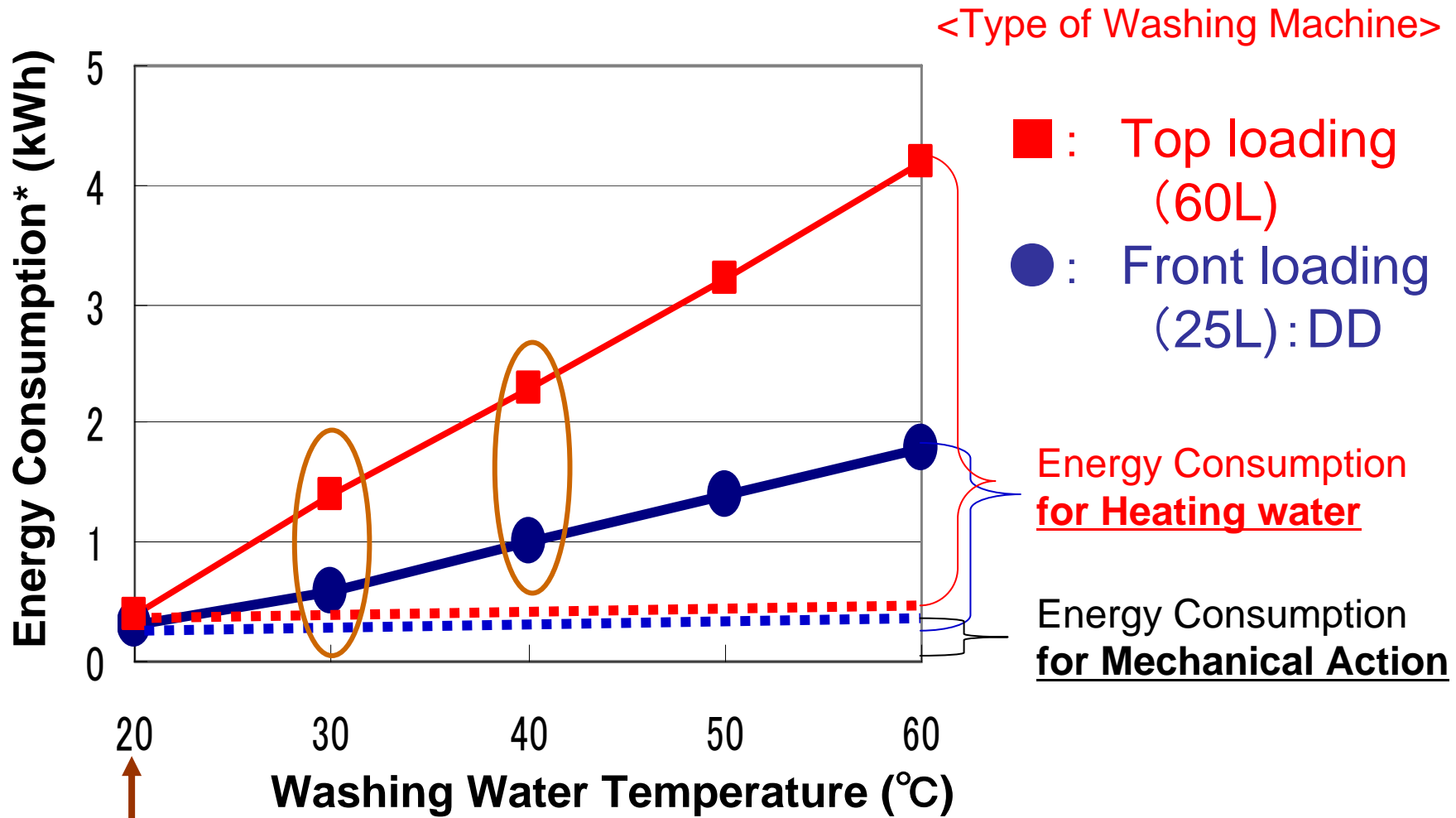
- The Use of Renewable Natural Resources

Washing-water Temperature (°C) in the Areas of Europe, USA and Japan



- The average washing temperature in Europe is 42°C, higher in the north.
- That of Japan is 5 to 30°C : the ambient temperature of tap water.

Energy Consumption of Washing Machines per Wash



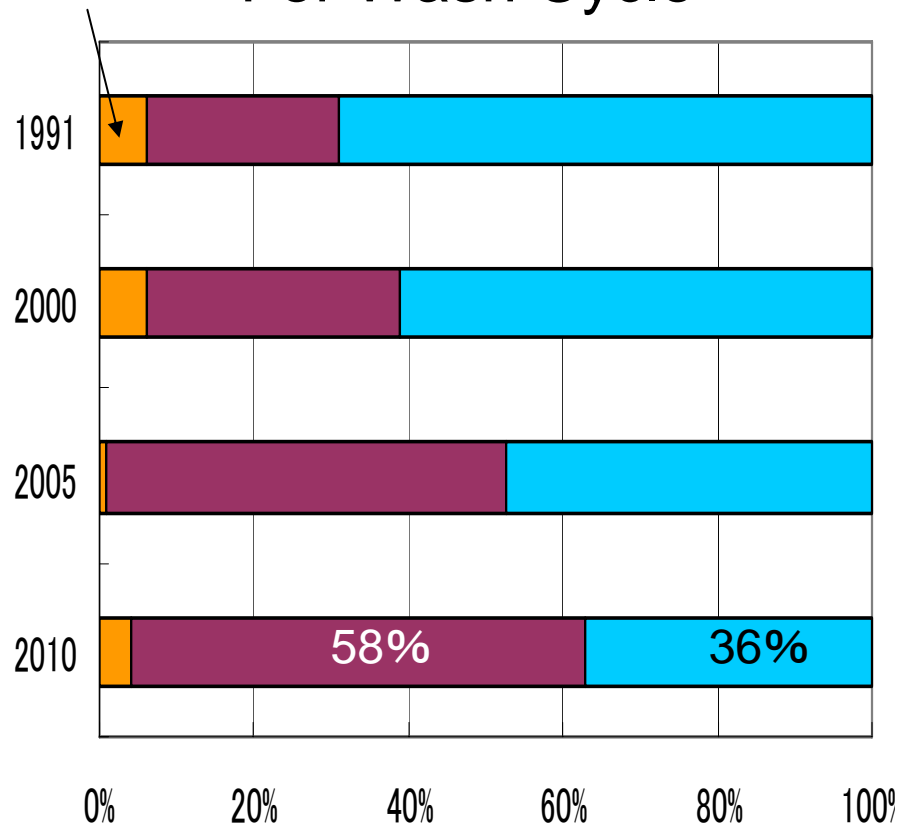
Japan av.

“Heating the water” shows the biggest impact in total energy consumption

•According to the electric output estimation by the heating efficiency of 75%.

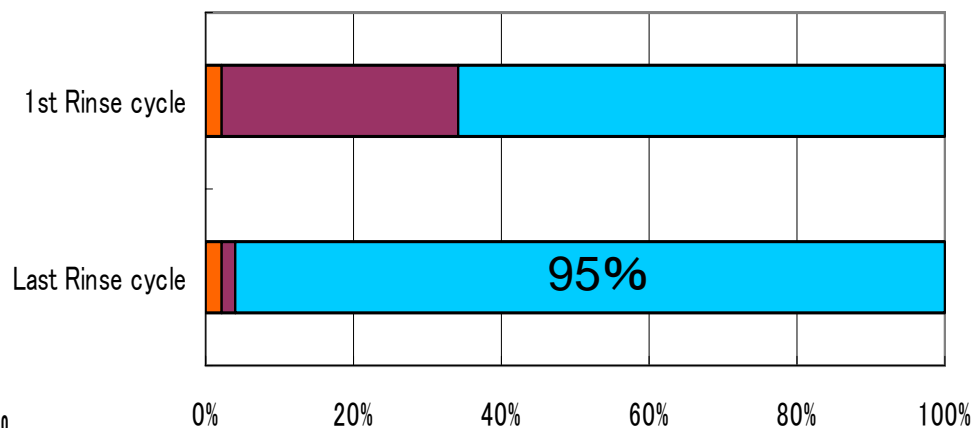
Washing Water Type in Japan – a historical aspect

Hot water For Wash Cycle



■ : Hot water
■ : Bath water from the bathtub
■ : Tap water – Ambient Temp.

For Rinse Cycles in '2010



- Almost no use of hot water
- Increase of bath water use
- Last rinse is done by tap water

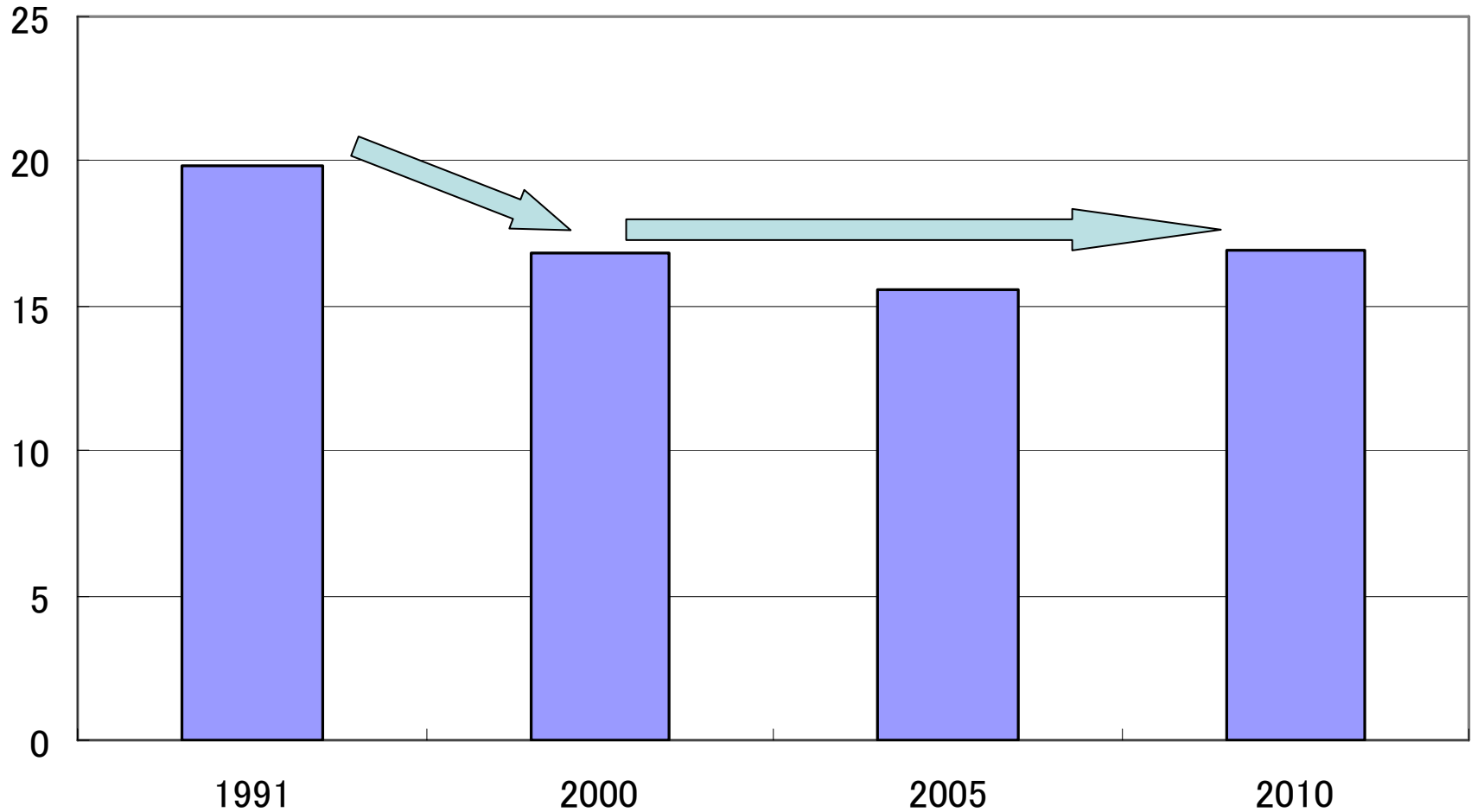
“Mottainai” feeling

Source : JSDA

Water Saving – average bath ratio

Average Bath Ratio

Source :JSDA survey



Clear lowering of bath ratio vs.'1991 is observed, and it has been stable at low in these 10 years.

Technology Developments to Boost Detergency even at the Low-temperature and Low-bath-Ratio Washing

Low temp. ,low bath ratio = Disadvantageous washing condition
⇒ Comprehensive ingenuity

- Low-temperature-adjusted surfactant system
nonionic surfactants
polymers to suppress redeposition.
- Enzymes with low temperature / alkaline condition tolerance
- Specific activator for low temperature washing
Stabilized in powder and also in liquid bleaches
- Improvement of solubility – Special granulation technology
for powder detergent

Reduction of total surfactant amount ⇒ more ecological

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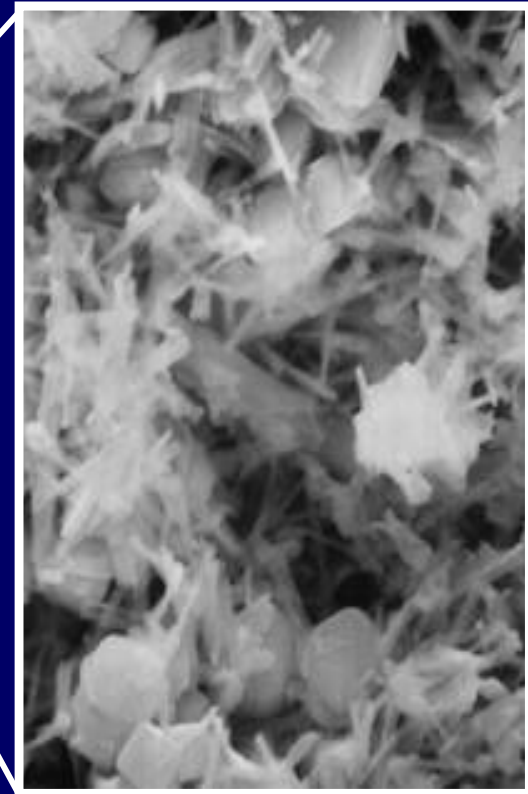
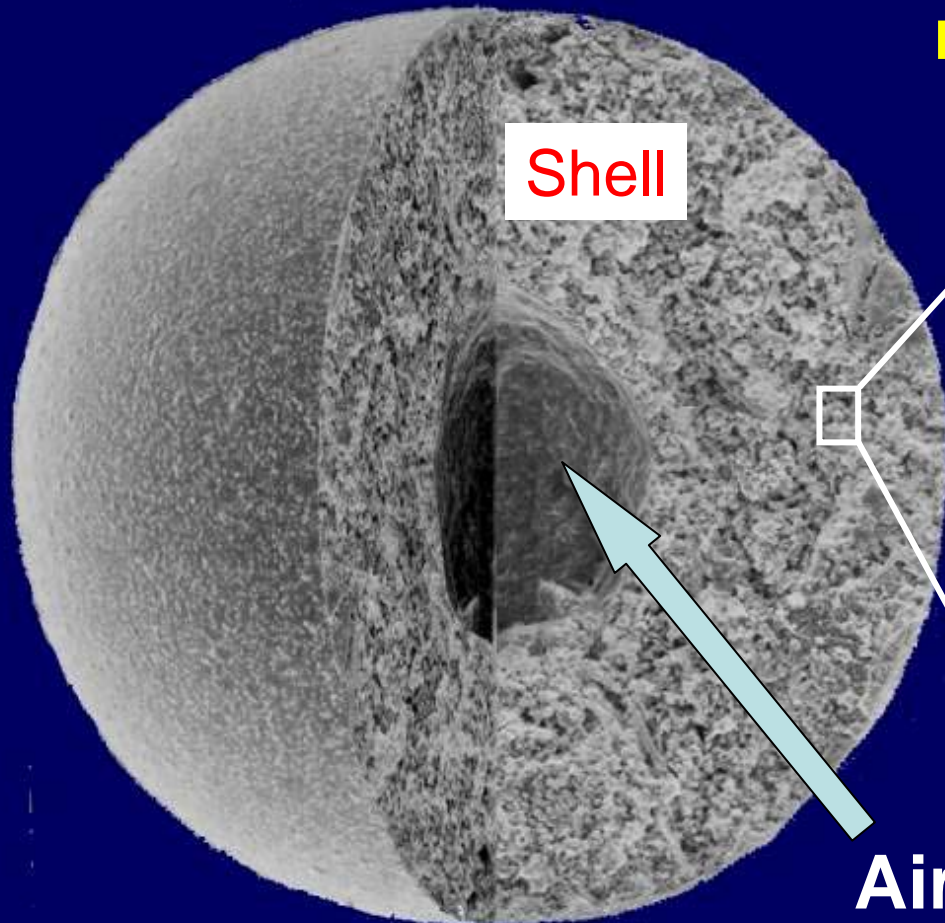
Reduction of total surfactant amount ⇒ more ecological

Powder Structure of High-solubility Detergent

Function : Rapid solubility + Shell bears liquid Surfactants

SEM Image - cross section

Aggregate of zeolite and water soluble inorganic salts which bears surfactants



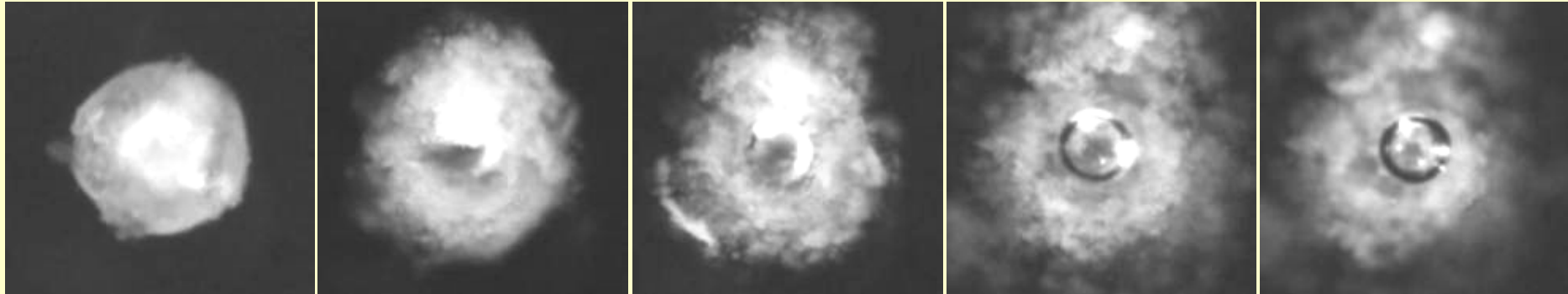
5 μ m

Rapid Solubility of the Special Detergent Granule

Temp.:
25°C

Dissolving behavior of a granule with the special structure

Water penetrates inside → inorganic salt dissolved → quick burst-up with bubble



Dissolving behavior of the conventional granule

Dissolves gradually from the surface



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Concentration and Compaction of Detergents

The use of proper amount of detergents

Popularization of Refills

- Increase of the Use of Renewable Natural Resources

Concentration and Compaction of Detergents

- It firstly happened in 1987.



2.65 kg



1.5 kg



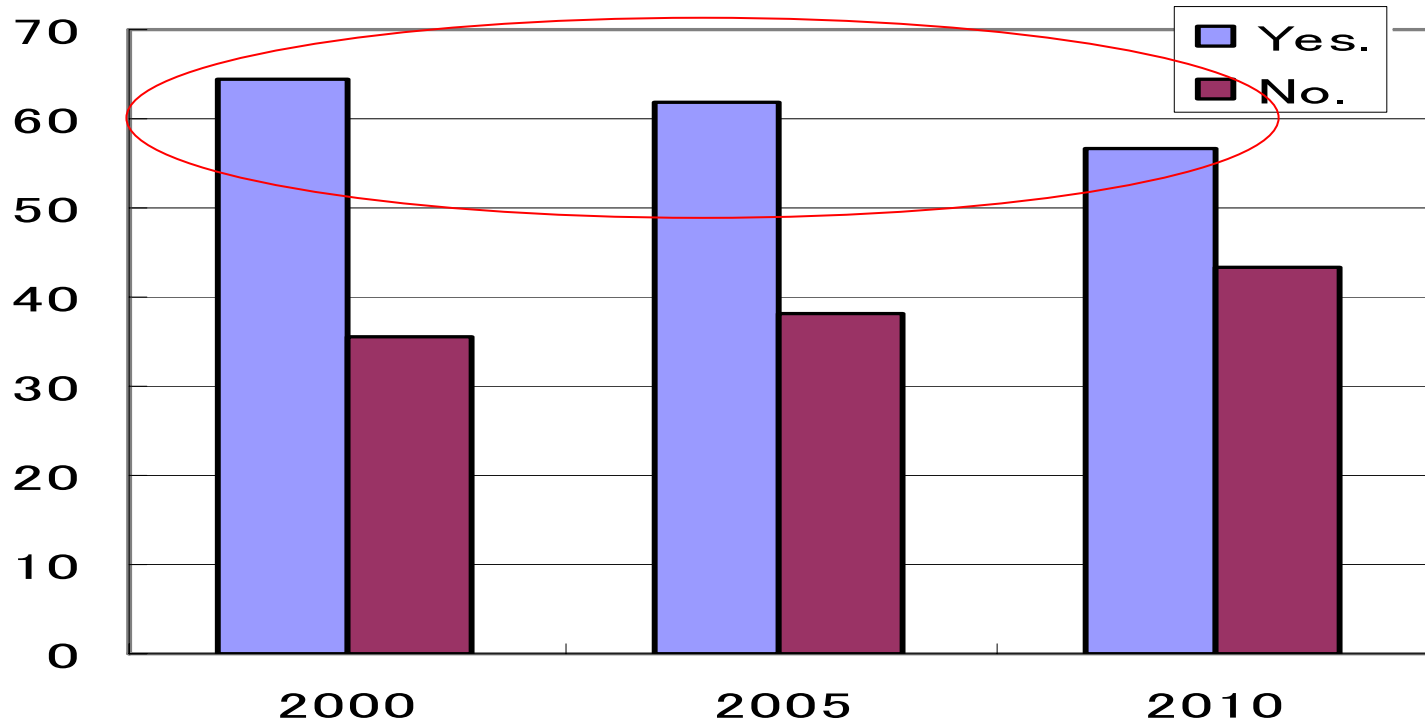
- Higher detergency with $\frac{1}{4}$ Volume of conventional powder
 - New enzymes (cellulase, lipase) onto conventional protease use.
 - Introduction of an activator
 - Co-packing of a measuring spoon to avoid excessive use of detergent
 - Easy to carry – easy to buy, space-saving in the house (for consumer)
 - Resource saving for packaging
 - Higher energy efficiency of the manufacturing and transportation
 - Higher shelf efficiency (for the shops)

⇒ The mainstream in Japan. Expanded to the world.

Current Status of Measurement of Detergents

Source : JSDA survey

Do you control the amount of detergent by the amount of clothes and soil ?



Those who controls : ca. 60%

Because of *“mottainai”* feeling



Spoon
for powder



Cap
for liquid

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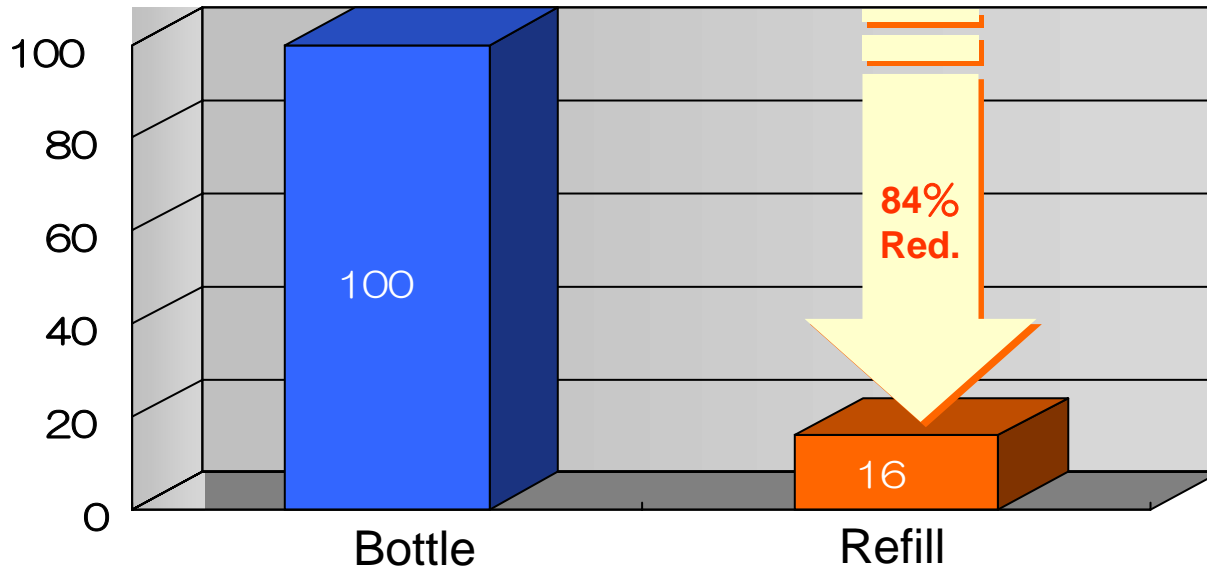
Taking root of the use of proper amount of detergents

Popularization of Refills

- Increase of the Use of Renewable Natural Resources

Eco by Refill in Japan

Comparison of plastic consumption

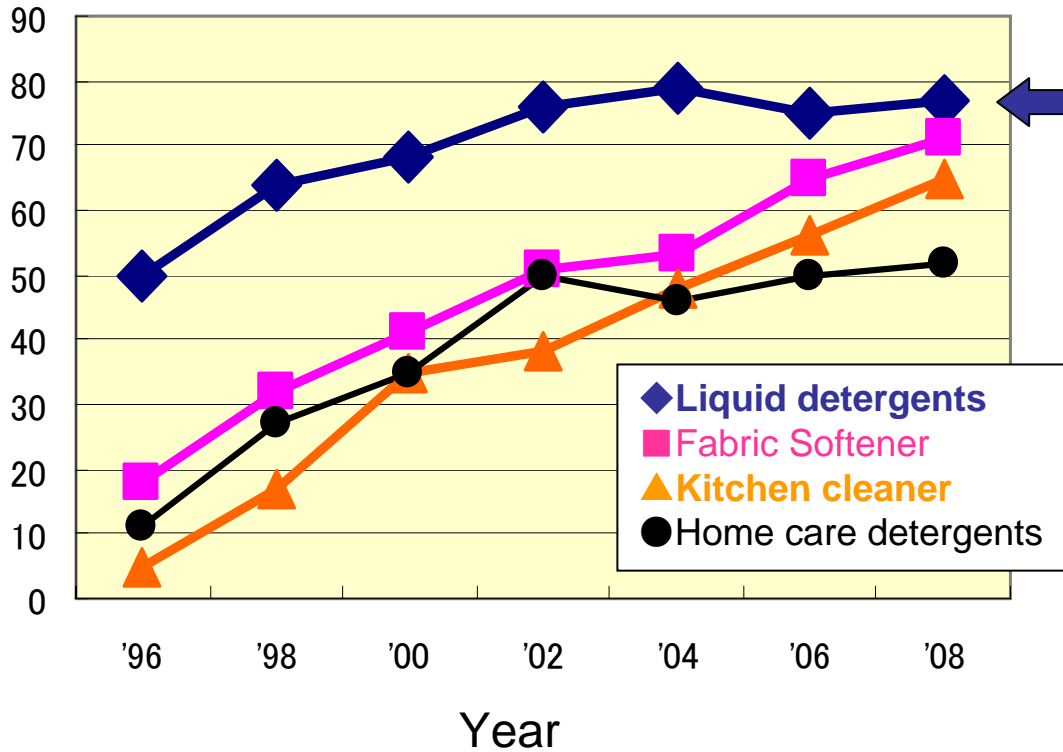


* Comparison:
Weight / Wash

Plastic consumption of a refill: ca. 16 % vs. a bottle.
The volume at the discard stage is also very small.

Trend of Refill Products' Share (Ratio %/unit)

% : Shipment share

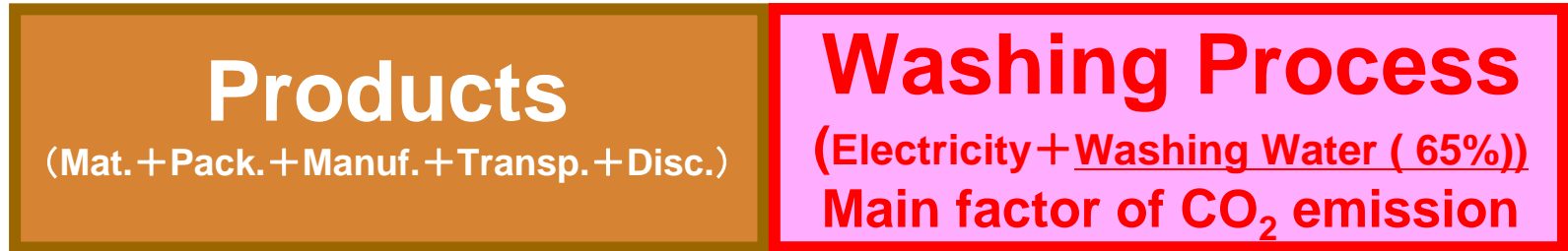


The share of refills of liquid detergents = ca. 80%

Most of the liquid detergents are sold as refills in Japan

New Strategy to Further Eco Activities for Japanese Laundry Detergents (LCA view point)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



• Reduce

Reduction of Raw materials
(Super) Compaction (Conc.)

Red. of plastics for packaging
Improv. of transp. efficiency

• Reuse

Further expansion of Refill (reuse of bottle) : "Mottainai"

• Recycle

Use of recycle papers, plastics

• Replace

Use of renewable natural resources

• Reduce

Water saving
Energy saving

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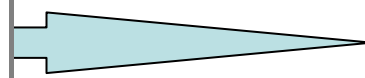
• Reduce

Water saving
Energy saving

A New Approach to More Eco-friendly Washing



x2.5 Super Conc.



**Concentrated
Liquid Detergent
from 20 years ago.**

**New Eco-oriented
super-concentrated
Liquid Detergent**

1 kg

25g/30L



Water

Active Agents

400 g

10g/30L



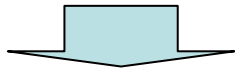
25 times / bottle
(/45L)

Can be used same times

Reduction of Rinsing Water by New Surfactant System

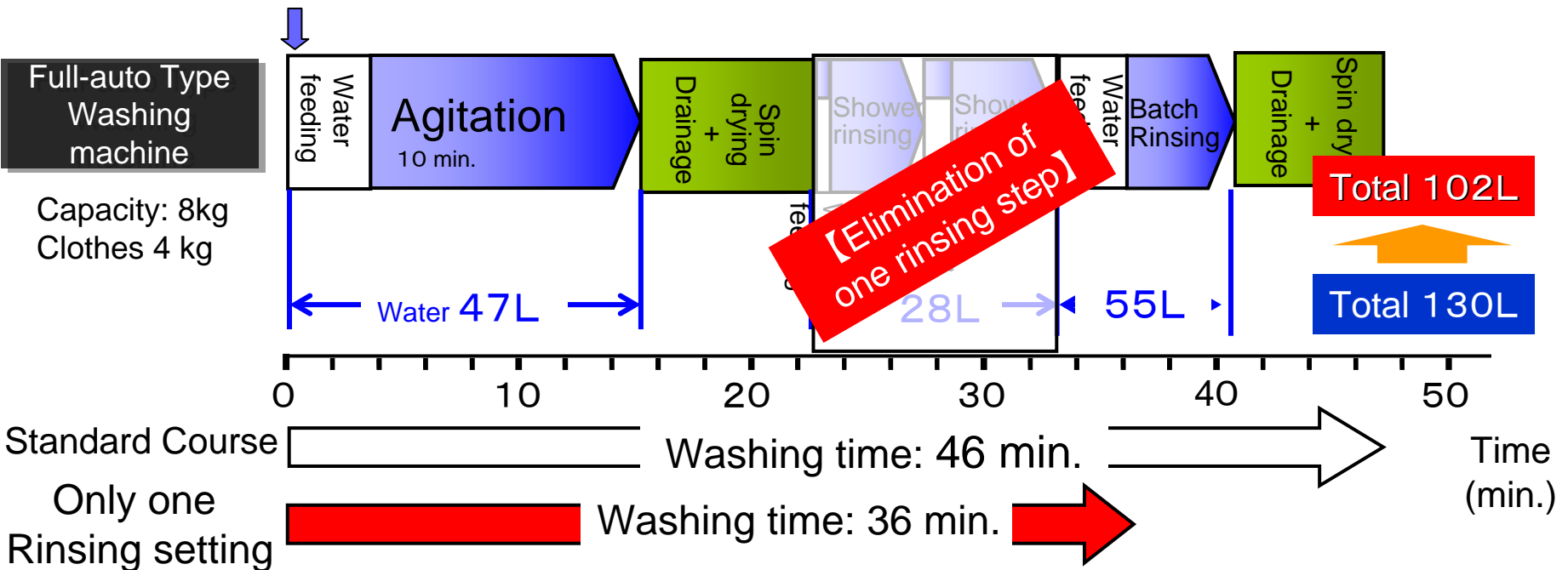
< Newly developed surfactant system >

- ① Adsorbs to and emulsify the soil ⇒ High detergency
- ② **Hardly adsorbs to the fibers** ⇒ Low residual ⇒ Easy to rinse off



Both Good foaming and quick de-foaming

Less water & time = Lower CO₂ emission



The New Approach to Eco-friendly Washing

x2.5 super conc.+ Reduction of one rinsing step

Concentrated
Liquid Detergent
from 20 years ago.

(water & energy saving)

New Eco-oriented
super-concentrated
Liquid Detergent

1 kg

25g/30L



21% CO₂ reduct.
in total
washing process

400 g

10g/30L



25 times / bottle
(/45 L)

Can be used same times

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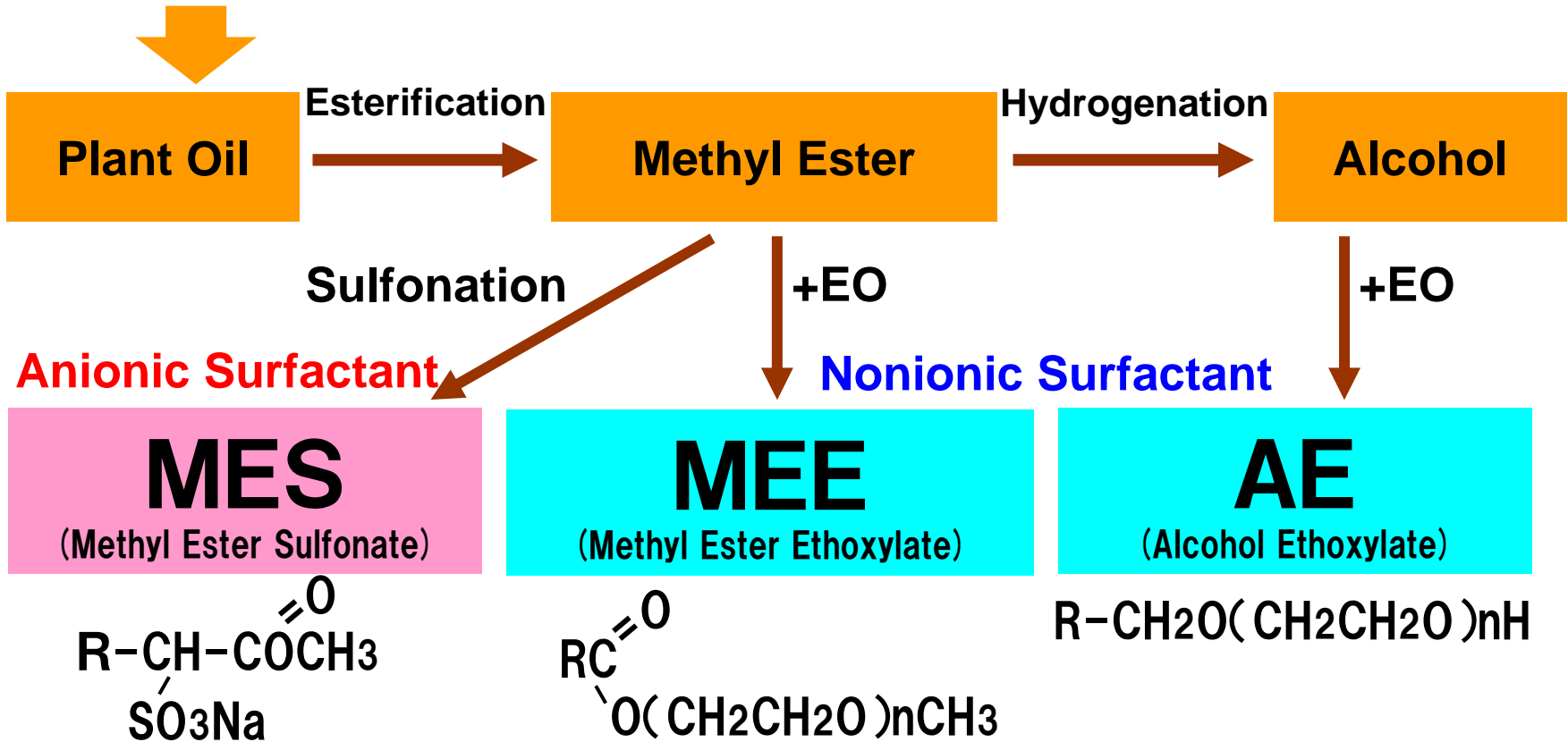


- **Reduce**
 - Reduction of Raw materials
 - (Super) Compaction (Conc.)
 - Red. of plastic for packaging
 - Improv. of transp. efficiency
- **Reuse**
 - Further expansion of Refill (reuse of bottle) : “mottainai”
- **Recycle**
 - Use of recycle papers, plastics
- **Replace**
 - Use of renewable natural resources
- **Reduce**
 - Water saving
 - Energy saving

GREEN Surfactants



Palm, Coconut etc.



Characteristic GREEN Surfactants

MES

(Methyl Ester Sulfonate)

*High detergency with
small dosage*

High Calcium tolerance

Low foam



Ultra Concentrated Powder

MEE

(Methyl Ester Ethoxylate)

*High detergency for
human sebum soil*

*No gel formation in
concentrated solution*

*Low foam, Less remain
on fabrics*



Ultra Concentrated Liquid

New Strategy to Further Eco Activities for Japanese Laundry Detergents (LCA view point)

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(Super) Compaction (Conc.)

Red. of plastic for packaging
Improv. of transp. efficiency

• Reuse

Refill : Continual improvement of usability

• Recycle

Use of recycle papers, plastics

• Replace

Further use of renewable natural resources

• Reduce

Water saving
Energy saving

Many Ingenuities on Refills to make them more usable

Embossed type



Side spout type with press-line



Straw type



New Bottle

Double and wide structure of the spout



Easy to use



Easy to refill

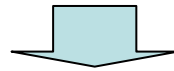


Universal design bottle type

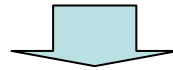


Epilogue – 1. Summary

- Past experience :
severe environmental pollution
- Japanese culture:
“living in harmony with nature”
- Consciousness / feeling: “mottainai”



The mind to lead an eco-friendly life.



Wishes to build up more eco-friendly society.

Epilogue – 2. Wider Wishes

Continuous efforts to create innovative technologies / communications

to fulfill the needs of the consumers' and the societies'

in any aspects and of any areas

of the Globe.

*Thank you very much
for
your kind attention!*



Japan Soap and Detergent Association