


A solution for sustainable lighting

Proposal from New PMMA materials



Creating a Sustainable World
with the Power of Chemistry

Creating What the Earth Needs Next

Sumitomo Chemical is an Innovative Solution Provider
that supports the future of the Earth from the field of chemistry

Major GX challenges for Sumitomo Chemical

Contribute to solving society's challenges through our business activities by advancing Green Transformation (GX) in a broad sense



Society's challenges that we endeavor to solve



Food

Secure stable food supply and achieve harmony with the environment



ICT

Achieve an inclusive society leveraging ICT



Healthcare

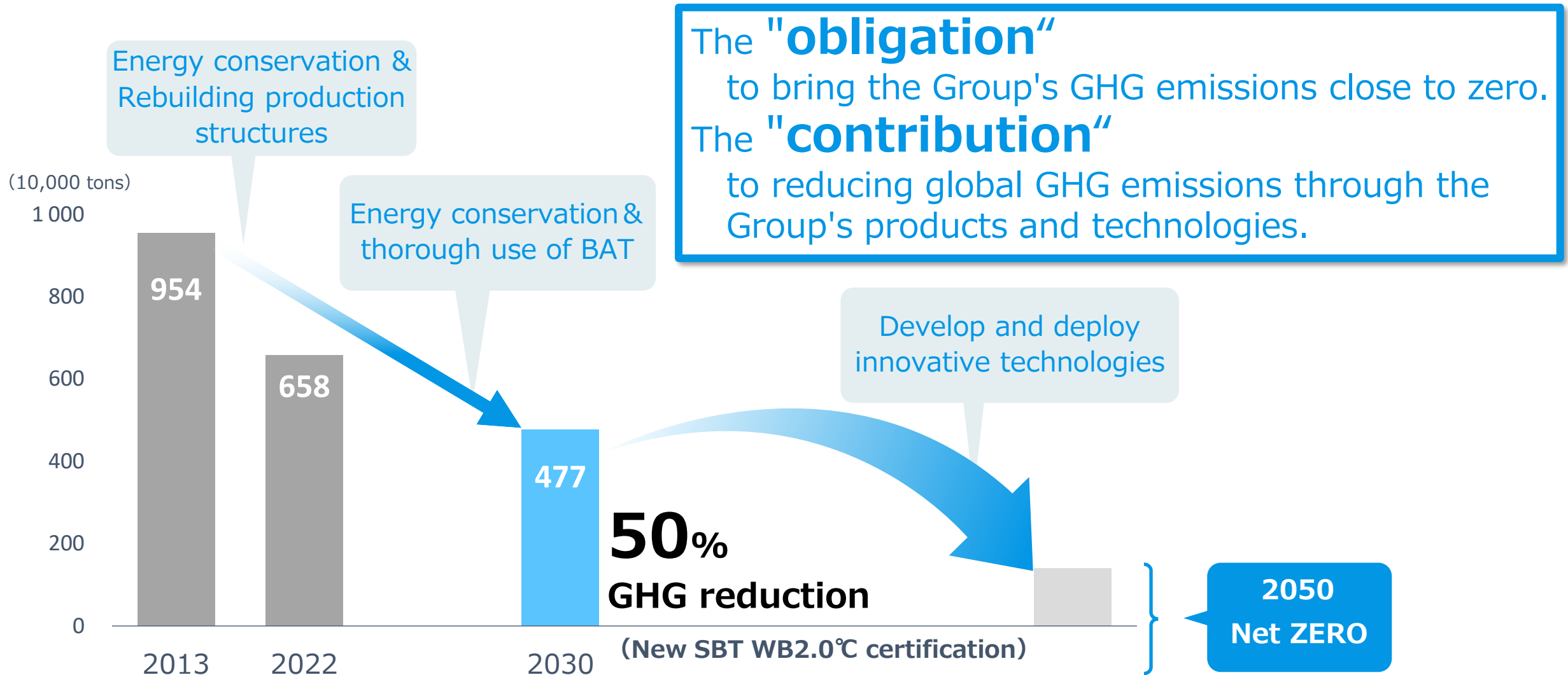
Secure healthy lifestyles for people throughout the world



Environment

Recover the environment and achieve a world where humans and nature co-exist

Toward a Carbon Neutral Sumitomo Chemical



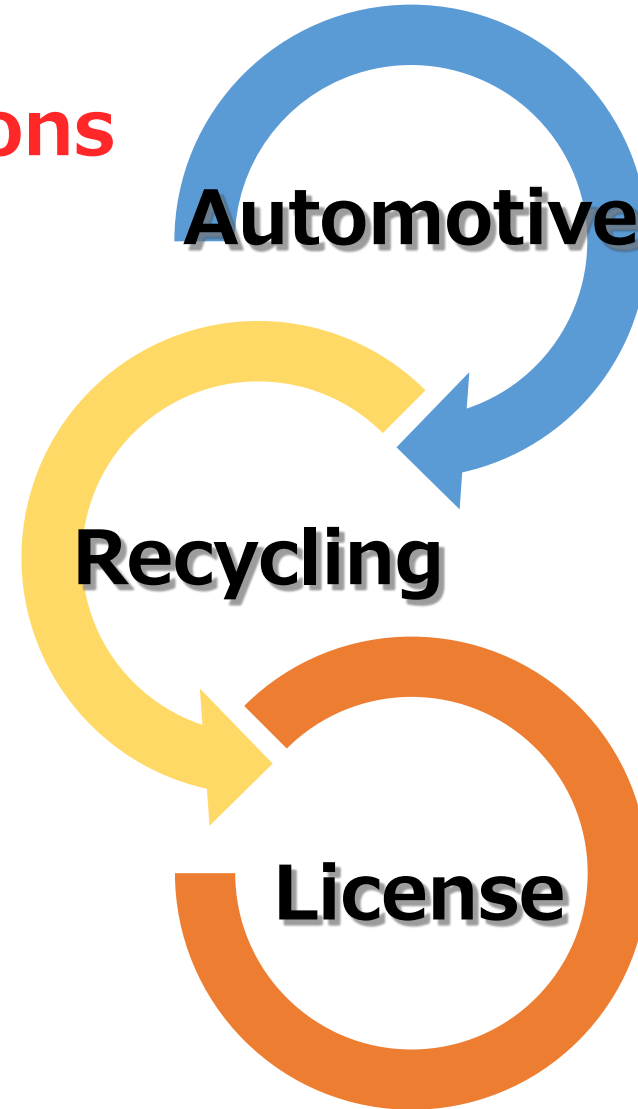
Sumitomo Chemical Group: Sumitomo Chemical + domestic and overseas subsidiaries.

Future direction for MMA business

- Specialize in high-margin products mainly for **automotive applications**
- Advance recycling technological development that contributes to a reduced **environmental impact** and focus on solutions business



Chemical Recycling technology
for Environmental Sustainability



Value added solution
mainly aiming Automotive



Technology license

SUMIPEX™ New PMMA provides a 'sustainable lighting'

SUMIPEX™ is the registered trademark of Sumitomo Chemical for its PMMA molding resins

New PMMA contributes to your challenges for

- **Reducing environmental impact**
 - Coating free innovation
 - Long lasting
 - Recycling
- **Design for 'New front panels'**



What Are the Key Challenges on the Road to Our Goal?

Coating **cost** & investment

Longer lifespan keeping good appearance

Good **LCI** of materials

The **recyclability** of materials

CO₂ emission in **coating** process

Cost for sustainability

How to **separate & sort** for easier recycling

[Head lamp]



Hard coated PC cover
&
PP/Talc housing

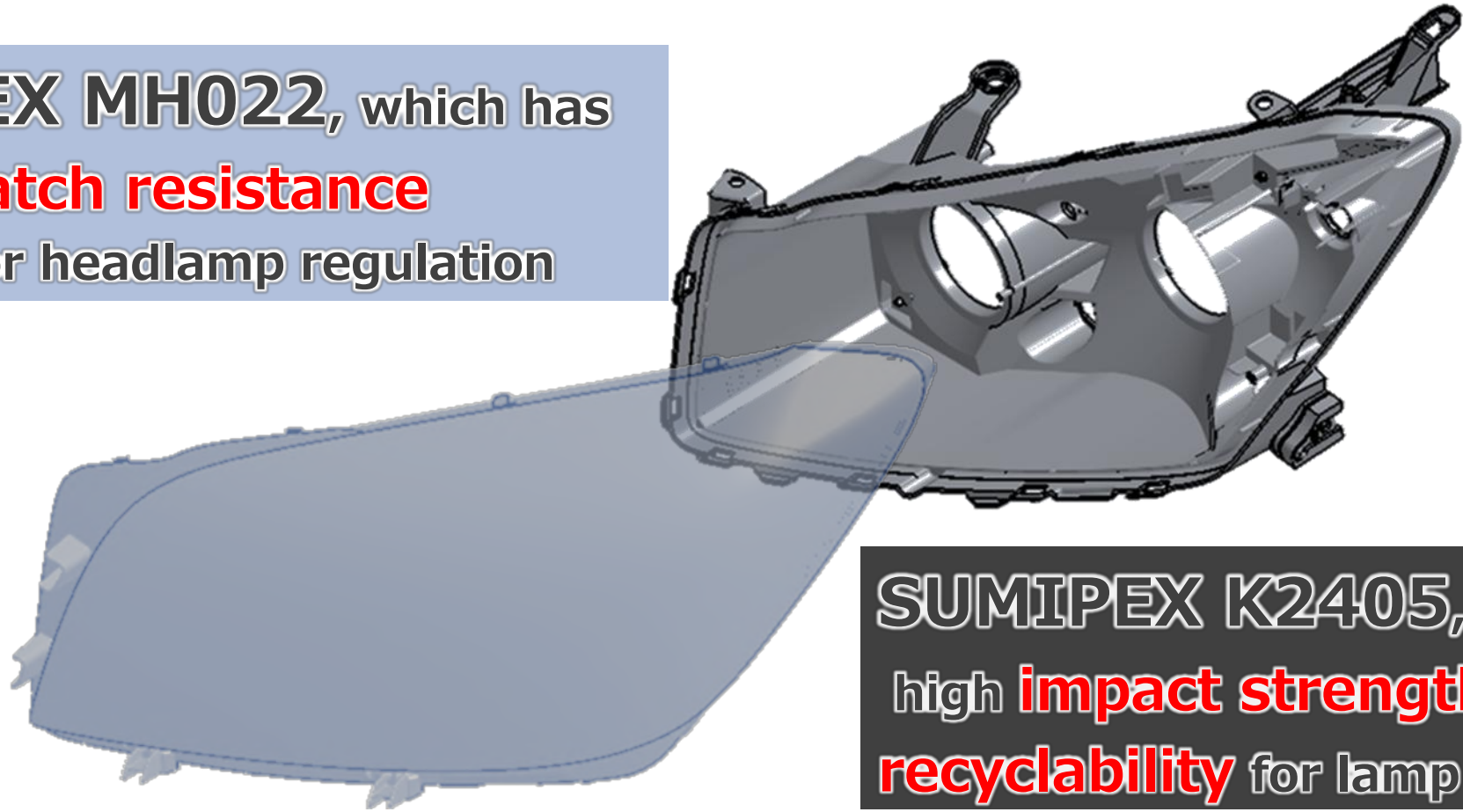
[Rear lamp]



PMMA cover
&
ABS or **ASA** housing

SUMIPEX Introduces New PMMAs for our challenge

SUMIPEX MH022, which has good **scratch resistance** enough for headlamp regulation

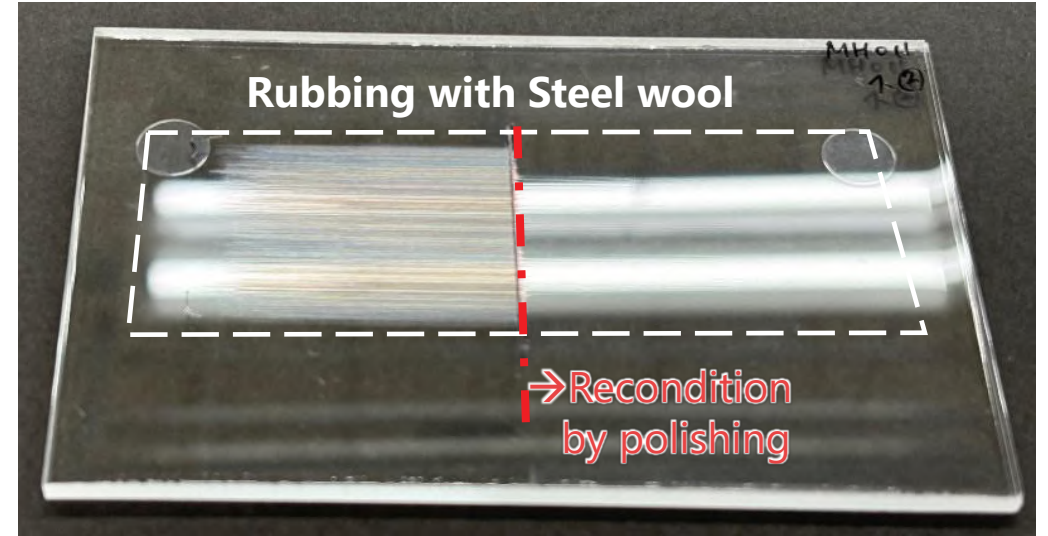
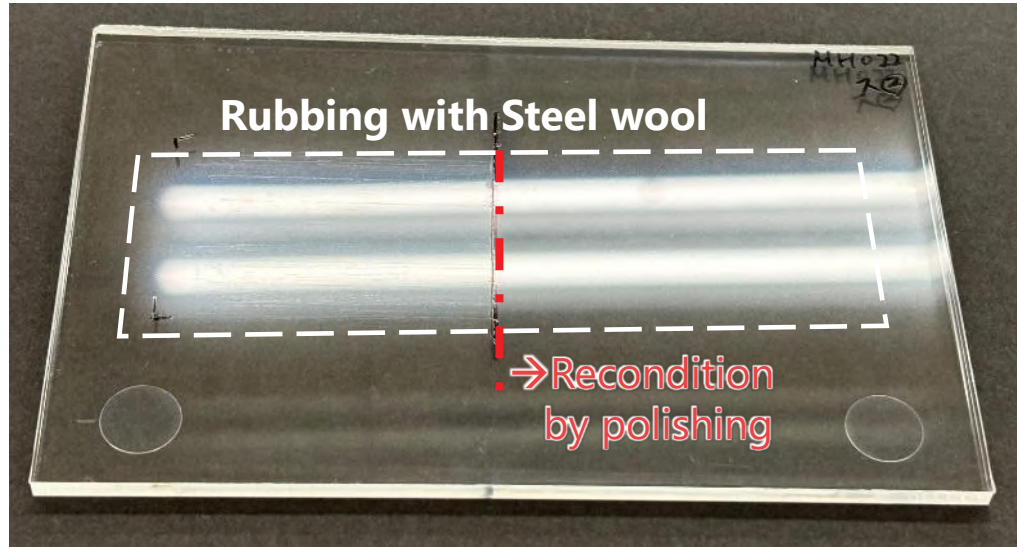


SUMIPEX K2405, which has high **impact strength** and good **recyclability** for lamp housing

Good scratch resistance of SUMIPEX™ MH022


SUMIPEX™ MH022

Conventional PMMA



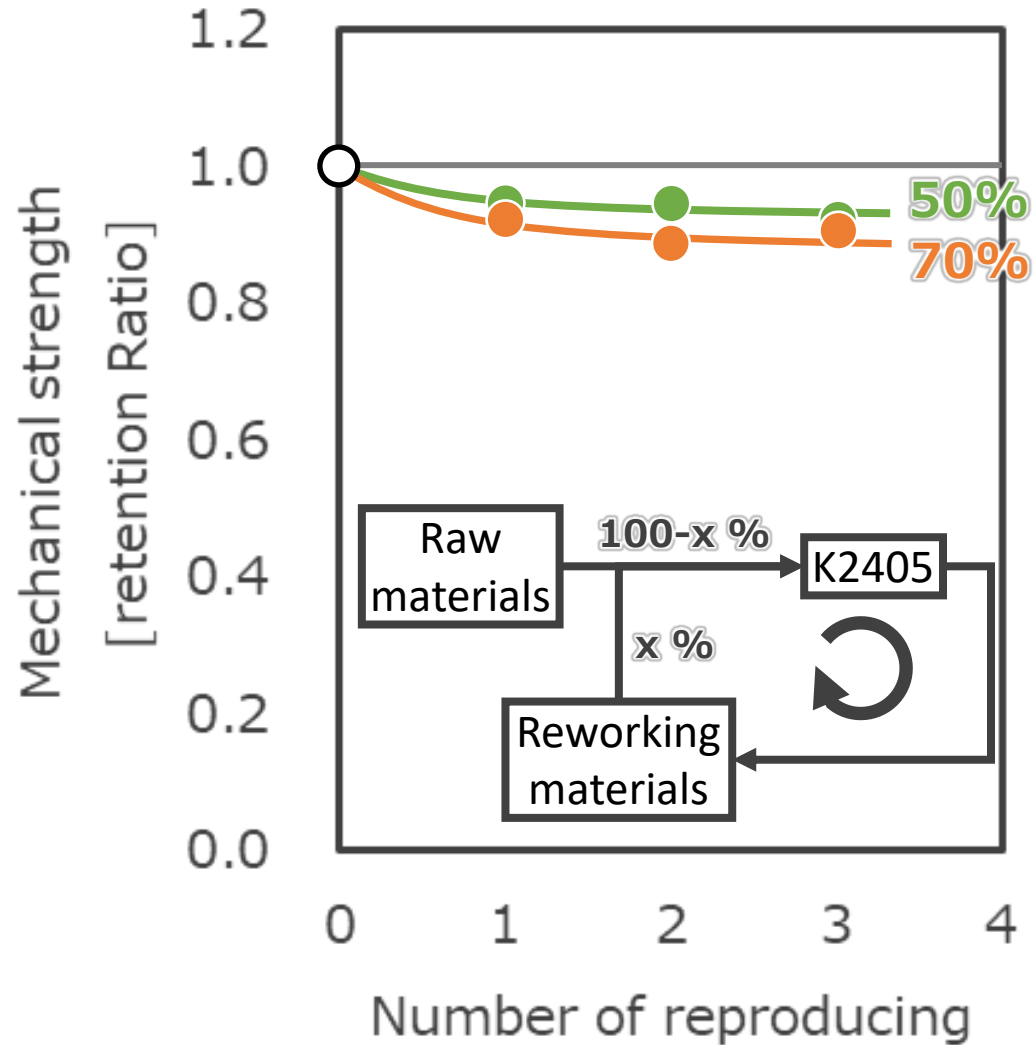
Regulations		SUMIPEX™ MH022	Conventional PMMA
UN Regulation No.149 (ECE)	Plate	Comply	Comply
	Lamp Assembly	<i>Possibly comply</i>	<i>Possibly comply</i>
FMVSS No.108 (Rubbing test with steel-wool)		<i>Possibly comply</i>	No
AMECA registration (SAE J576, 3years-outdoor weathering test)		Registered	Registered

Impact strength of SUMIPEX™ K2405

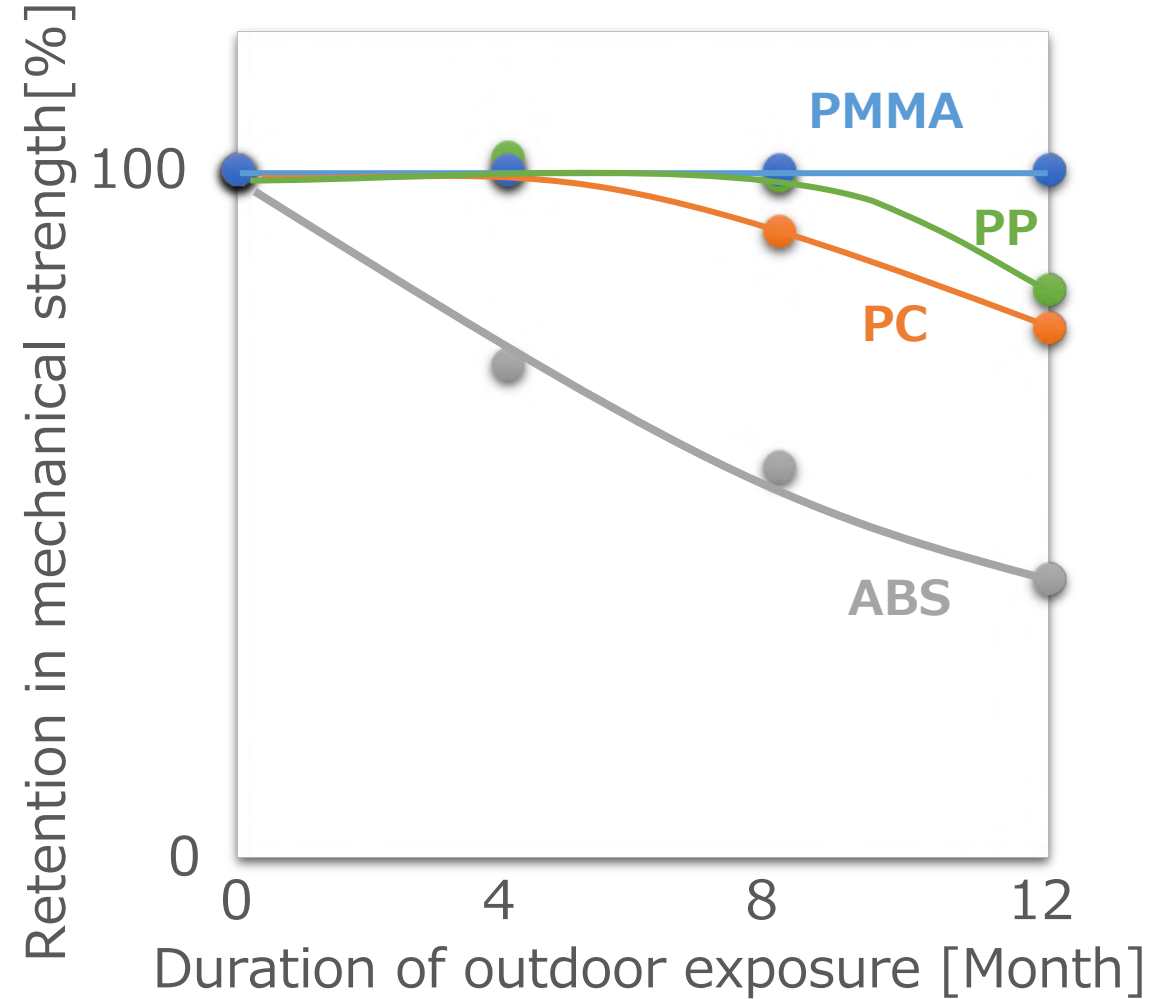
		K2405 High Toughness PMMA	Conventional High Impact PMMA
Flexural modulus		7GPa	2GPa
Tensile Strength		117MPa	56MPa
Heat resistance(HDT)		104°C	93°C
Coefficient of linear Expansion		3-5 X10 ⁻³ K ⁻¹	8 X10 ⁻³ K ⁻¹
Dupont Impact test Load:1kg Height:1m	25°C		
	-30°C		

The Mechanical recyclability of SUMIPEX™ K2405

The high recycle content



Good for recycling form ELV



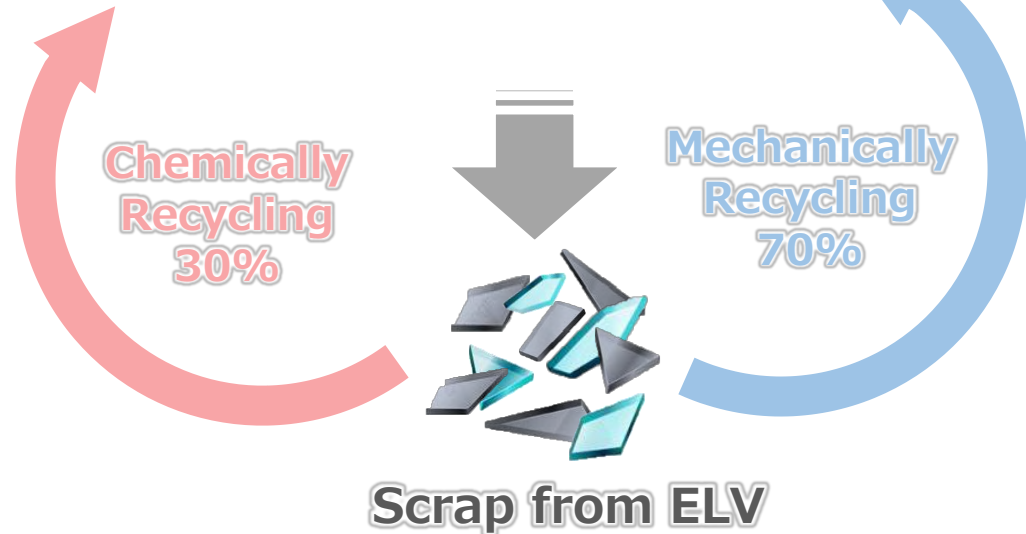
Report from New Energy and Industrial Technology Development Organization

The Concept of Mono-material lamp

K2405
High toughness PMMA



MH022
Anti-scratch PMMA



- No need for Hard-coating
- Long-lasting performance
Excellent durability, scratch resistance, and reconditioning
- Reduced process complexity, cost, and CO₂ emissions
- Designed for easy collection and mechanical/chemical recycling
- Applicable to New front panels

'Co-Creation' of Value around Automobile

