



EVERY HORIZON

Buckman

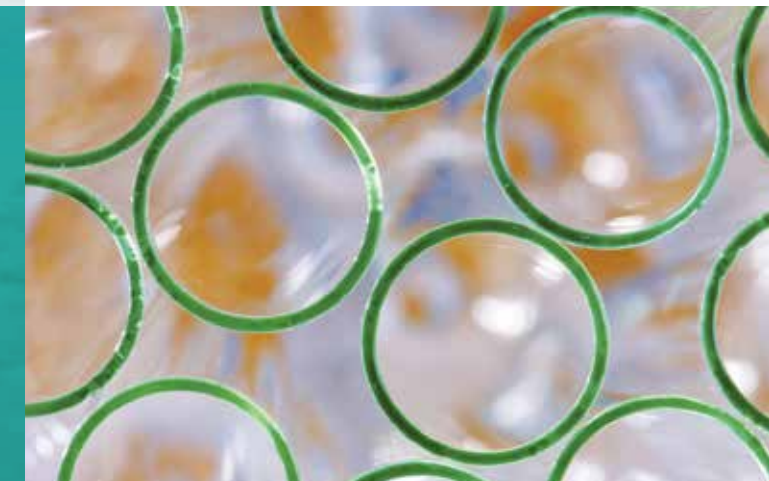




OUT THERE, AS FAR AS THE EYE CAN SEE,
IS THE HORIZON.

It might be where earth meets sky.
Or where costs meet budgets.
Where new products meet future
demand. Or where new processes
meet the needs of a healthy planet.

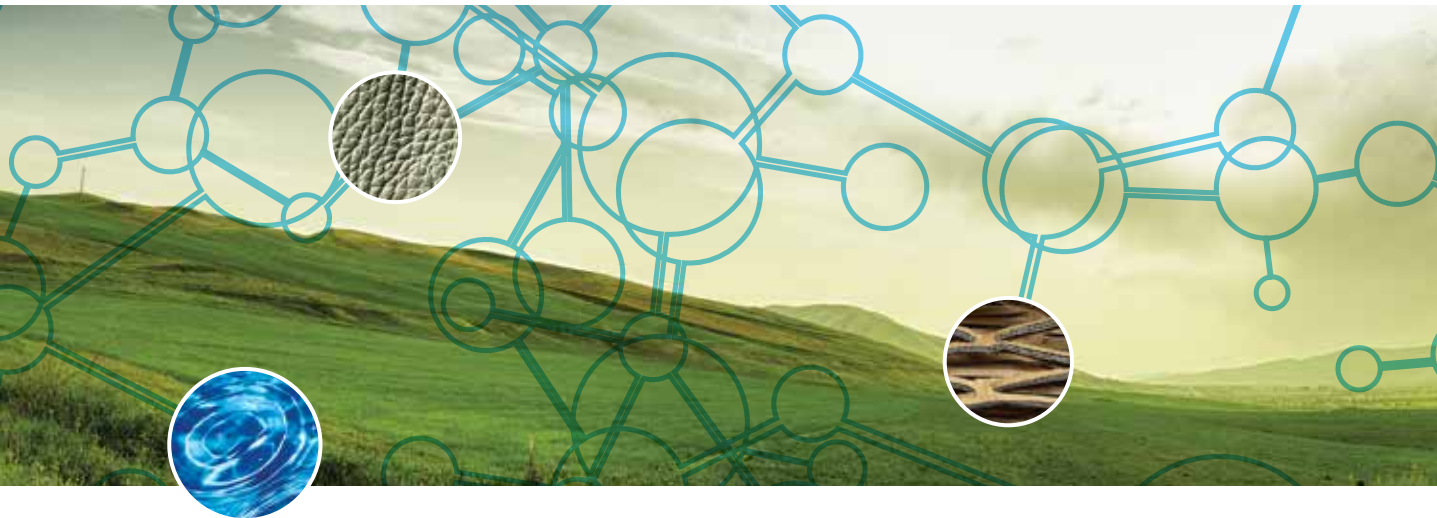
Whether they are time lines, goal
lines or bottom lines, they are your
horizon lines. And, as a global
chemistry company with a presence
in 96 countries, Buckman will go
to the ends of the earth to help
you reach them all.



Buckman

Commitment makes the best chemistry.

WHERE THE MOLECULAR MEETS THE GLOBAL.



At Buckman, we believe we can improve the way we live by improving the way things are made.

So we bring new advanced chemistries and technologies to the industries we all rely on. Some, like pulp and paper and leather, look to us for comprehensive chemistry and technical support throughout the operation to improve processes, enhance quality and increase profitability. Other industries, from ethanol to steel to food processing, rely on us for advanced water treatment technologies that keep cooling water

systems cleaner, improve reverse osmosis performance, optimize process and waste water systems, and reduce water and energy costs. Still other industries take advantage of our performance chemical applications to improve the quality, lifespan and effectiveness of their products. The result is products made smarter and lives made better.

Learn more about the industries we serve.



Since 1945, when microbiologist and biochemist Dr. Stanley J. Buckman started the company, Buckman has grown to encompass a geography just as wide-ranging as the industries we serve. With operating companies in North America, Latin America, Africa, Europe, Asia and the Pacific Rim, we can leverage global research and development to solve unique local challenges in ways no one else can.



Buckman Asia
Singapore

Buckman Australia
Wagga Wagga, Australia

Buckman Brazil
Campinas, Brazil

Buckman China
Shanghai, China

**Buckman Europe,
Middle East, North Africa**
Ghent, Belgium

Buckman India
Chennai, India

Buckman Japan
Tokyo, Japan

Buckman Mexico
Jiutepec, Morelos

Buckman North America
Memphis, Tennessee
Cadet, Missouri
Vaudreuil-Dorion, QC, Canada

Buckman South Africa
Hammarisdale, South Africa

PULP & PAPER

Mills rely on Buckman's advanced Paper Technologies to help them streamline repulping of recycled fibers, save time and reduce waste in papermaking, improve paper attributes and cost efficiencies, and reduce their environmental impact. For tissue mills, we help enhance absorbency, accelerate the creping process, and improve strength and softness through the use of enzymatic technologies and other innovations.



LEATHER

Buckman is the industry leader in hide preservation and microorganism control programs, including breakthrough enzymatic solutions. Leather makers look to us for superior beamhouse and tanyard systems as well as wet-end and finishing applications—chemistries that enhance how leathers perform in every phase of the process and, ultimately, how they perform in the marketplace.



POWER & UTILITIES

With specialized water treatment solutions, Buckman helps power plants burn less fuel for every megawatt of power produced and generate a bigger return. Plants are able to reduce operating costs and environmental impact, and they can make more power available to the grid when demand is highest.



SUGAR & ETHANOL

Buckman offers a broad range of solutions for sugarcane, beet, wheat and corn processors around the world, solutions that can improve products, protect equipment and enhance mill performance and efficiency, from sugar fermentation and distillation to corn oil recovery.



AGRICULTURE

Buckman supports fertilizer producers throughout the plant, from ammonia production to phosphate rock processing. And we provide advanced water treatment programs, soil fumigants, fungicides and more to support a variety of agricultural companies around the world.



OIL & GAS

For the oil and gas industry, it's not only about extracting natural resources, but also about conserving them. Buckman helps producers improve the efficiency of cooling and process water systems, optimize extraction and refining processes, manage risk, enhance safety and lower the total cost of operation.

FOOD & BEVERAGE

Food and beverage companies feed their bottom lines by taking advantage of Buckman's expertise in water treatment, corrosion reduction, byproduct recovery, cleaning and more.



MINING

Mining companies look to Buckman for mine water clarification, boiler and cooling water treatment, smelting and refining solutions, dust control and other technologies, so they can extract more value from both surface and subsurface operations.



METALWORKING

Buckman chemistries control the bacteria, fungi, yeasts, and molds that can deplete additives, destabilize emulsion systems, restrict flow, and generally degrade the performance of metalworking fluids. Lines, filters and clarifiers stay clean for optimum working conditions.



COATINGS AND PLASTICS

With UV light stabilizers, in-can preservatives, flame retardants and many customized solutions, Buckman can help protect the integrity of formulated products and improve long-term performance.



RECREATIONAL WATER

Buckman provides comprehensive swimming pool and spa solutions that keep water crystal clear, equipment functioning smoothly and surfaces clean.



STEEL

For the steel industry, Buckman provides water treatment and cleaning systems that enhance the entire steel making process, including coke production, iron making, steelmaking, casting, forming and rolling.



BIOFUELS

We provide advanced protection against microbiological contamination and other problems related to the storage, transport and combustion of biodiesel.



FIBERGLASS

Today's formaldehyde-free binders create big microbiological challenges for fiberglass producers, including harmful bacteria, deposits in piping and tanks, health-threatening gases and costly system corrosion. While conventional water treatment solutions carry risks of their own, Buckman has developed a smarter, more sustainable technology that works better on microbiological activity. So plants can increase production, reduce costs and better protect people.

WHERE ROI MEETS ROE.

Return on investment.
It's critical to every company's
success. But today so is
Return on Environment.

You need it to stay in compliance. Save
money on energy, water and raw materials.
Reduce waste and CO₂. And create future
opportunities for growth.

For years, Buckman has relentlessly pursued
our own reduction in waste, energy use and
water consumption. And we've worked to

bring greener technologies and new levels
of efficiency to our customers. Traditional
chemistries, applied more sustainably, play
an important role. But Buckman also
harnesses the power of natural enzymes to
do some of the work better and at less cost.

To date, Buckman holds more than a dozen
patents, with more pending, for our enzymatic
technologies, which are at work every day
in mills, tanneries and plants around the world.
They've won two Presidential Green Chemistry
Challenge Awards from the U.S. Environmental
Protection Agency. And they, alongside our
entire advanced chemistry line-up, have
continued to win over customers committed
to a sustainable future.

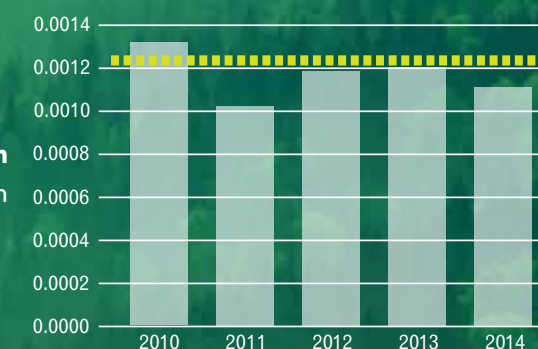


At Buckman, we're making strides to reduce our
energy and water consumption and our CO₂ emissions.

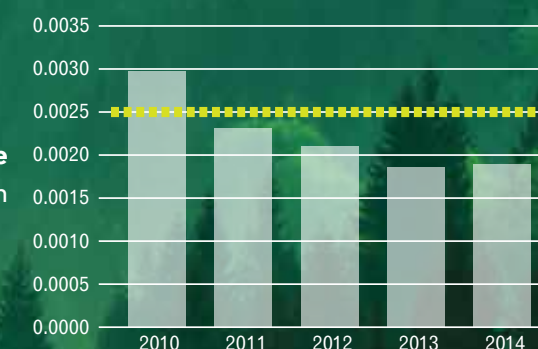


15% reduction target by 2015

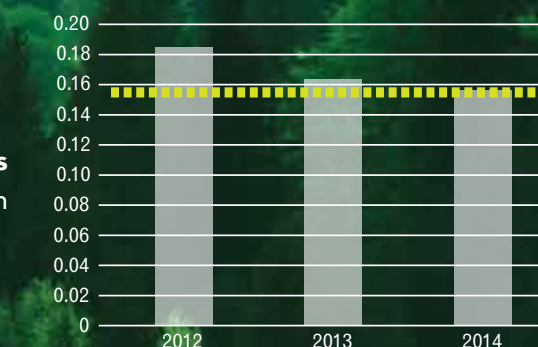
Direct Energy Consumption
gigajoules per kilogram of production



Water Usage
meter³ per kilogram of production



CO₂ Emissions
kilograms per tonne of production

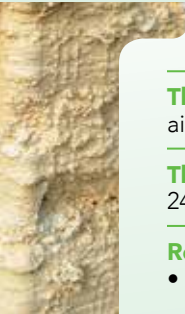


Initiative. In it, we provide detailed information about our progress
in six key areas: economics, the environment, labor, human rights,
society and product responsibility.

Scan the QR code for more about our
sustainability initiatives, including our latest
report, which adheres to the stringent
requirements of the Global Reporting



Where customers meet success. Buckman's far-reaching approach to chemistry is helping customers improve product, process and planet. Here are success stories from across the globe.



PAPER:
Reducing the Cost of Pulp

The Challenge: A mill producing softwood kraft bleached grade pulp suffered from high washing aid usage and cost and poor flow through the evaporators, causing a production bottleneck.

The Solution: Buckman applied a new washing aid program that reduced shower flow by 240 gallons per ton and raised the level of evaporator solids.

- Return on Investment (ROI)**
- Because less water was needed per ton, the mill could reduce energy use by \$2 per ton for a savings of \$840,000 per year.
 - The bottleneck at the evaporators was eliminated, allowing the mill to make more tons per day.

- Return on Environment (ROE)**
- The mill could save up to 240,000 U.S. gallons of water per day.
 - Less water means significantly less energy required for evaporation, reducing the operation's carbon footprint.

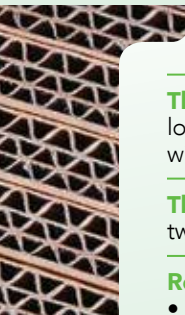
PAPER:
Improving Tissue Production

The Challenge: A tissue mill wanted to improve sheet softness and runnability for its biodegradable, food-contact-approved 3-ply tissue.

The Solution: Buckman applied Buckman® 691 which improved softness and production efficiency. Hood temperatures were lowered, reducing emissions. And blade life was extended.

- Return on Investment (ROI)**
- Blade life extension saved \$18,750 per year.
 - Production increase valued at \$300,000 per year.
 - Hood temperature was reduced 30 degrees C.
 - Total ROI (after treatment costs) \$102,000 per year.

Return on Environment (ROE) Reducing gas at dryer hoods saved 172.8 tons of CO₂ equivalent emissions per year.



PAPER:
Improving Drainage for Packaging

The Challenge: A large, modern machine making two-ply linerboard from recycled fiber was losing productivity due to drainage limitations with recycled fiber. Excessive water loads in the wire section led to drive system overloads, reduced speed and high steam usage.

The Solution: Buckman introduced our new Maximize® formulation to the stock storage chest two hours before the paper machine.

- Return on Investment (ROI)**
- As Maximize began to cycle up in this closed system, drainage began to improve.
 - Paper machine speed records were set.
 - Wire section drive loading was reduced 5%.
 - Production rates increased.

Return on Environment (ROE)
The mill added incremental tons while reducing the energy usage per ton and the operation's overall carbon footprint.



LEATHER:
Optimizing the Beamhouse

The Challenge: A bovine tannery wanted to minimize the environmental impact of unhairing and liming while optimizing cleanliness, openness and chrome penetration. An increase in area yield would be a bonus.

The Solution: Buckman replaced conventional chemicals with advanced Buzyme® enzymatic solutions which reduced sodium sulfide and eliminated the use of a number of auxiliary chemicals. Careful measurement indicated significantly improved wetblue area yield.

Return on Investment (ROI) The gain in area yield was conservatively estimated at an ROI of >\$800,000 per year. The tanner also gained a better quality wetblue for the market.

Return on Environment (ROE) The tannery was able to avoid the use of approximately 480 tons of sulfur-based chemicals per year. Sodium sulfide was reduced 40-50%.

WATER:
Reducing acid and energy use

The Challenge: An ethanol plant found that using sulfuric acid to lower pH in their thin stillage was becoming too costly.

The Solution: Buckman went to work feeding a specialized Bulab® chemistry ahead of the first evaporator. The result was a reduction in acid use of almost 45%. In addition, the need for evaporator cleaning was reduced significantly, saving both energy and money.

- Return on Investment (ROI):**
- Reduced materials cost
 - Target pH was maintained using significantly less acid
 - Lower process costs
 - Alcohol reprocessing was avoided
 - 10 CIP's per year were eliminated
 - Acid wash frequency was reduced
 - Cleaning became easier and faster with fewer plugged tubes

- Return on Environment (ROE)**
- Reduced steam usage—Cleanings between shutdowns were eliminated on one evaporator, avoiding the reprocessing of 1800–3800 liters of 200-proof alcohol usually necessary for switching evaporators. The reduction in steam usage equates to a reduction in energy generated and a reduction in the carbon emissions from the plant.
 - Higher syrup solids—Solids run through the evaporator increased from 31% to 37%.
 - Reduced discharge—Acid wash frequency was reduced, avoiding the discharge of 6800 kilograms of sulfamic acid into the environment.
 - Improved heat transfer performance—Plant had additional flexibility to optimize water balance and backset usage. This in conjunction with the elimination of cleaning water on the evaporators resulted in a reduction in the plant's water footprint.



WATER:
Reducing organic loading

The Challenge: A large power generation facility was plagued by high organic content in its high pressure boiler feedwater, resulting in higher organic loading in the pretreatment system and shortened resin run lengths and resin life.

The Solution: Buckman implemented a program to remove suspended solids and reduce total organic content, elevating the plant's TOC removal efficiency from 25 percent to as high as 62 percent.

Return on Investment (ROI)
Reduced regeneration frequency and chemical usage saved about \$290,000 per year. Reduced blowdown levels on the boiler saved \$2,000 per year.

- Return on Environment (ROE)**
- Reduced effluent chemical loading by 251 tons per year.
 - Reduced regeneration frequency, conserving natural river resources.



Chemistry: the science that brings us together
and the relationships that keep us together.

Buckman isn't merely a chemical company.
We're a *chemistry* company. Chemistry is
products plus application expertise.



Chemistry is cutting-edge innovation, like
our Buckman OnSite® web portal and other
tools that help customers automate, monitor,
analyze and stay connected.

Chemistry is industry-leading safety protocols.
Robust account management programs.
Nationally-recognized training for our
associates. And the ongoing global exchange
of knowledge.

Chemistry is the meticulous documentation
of return on investment for every project
we undertake.

In short, chemistry is chemicals and
commitment creating positive reactions—
from plant to marketplace.

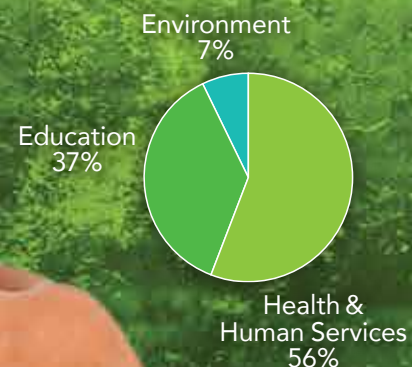
WHERE
CHEMICALS
MEET
COMMITMENT.



WHERE TIME AND TALENT MEET HOPE AND NEED.



2014 Volunteer Hours



As a global citizen, Buckman is concerned with the quality of life in all the communities we call home.

That's why, through *BuckmanCares*, we dedicate resources – both financial and human – to improving education for youth, enhancing health and human services and bolstering environmental stewardship.

A few of our projects include:

- Blood drives around the world to help preserve life, fight disease and enhance disaster readiness
- Our global Storytelling Project in which students learn life lessons in teamwork through the power of story
- Financial support of the Red Cross and Red Crescent for their critical disaster relief work



Buckman associates devote thousands of volunteer hours to help tens of thousands of people each year through charitable and social organizations that offer hope and opportunity. It's the chemistry of caring. It makes being a Buckman associate more rewarding. And it makes the communities we call home healthier and more vibrant.

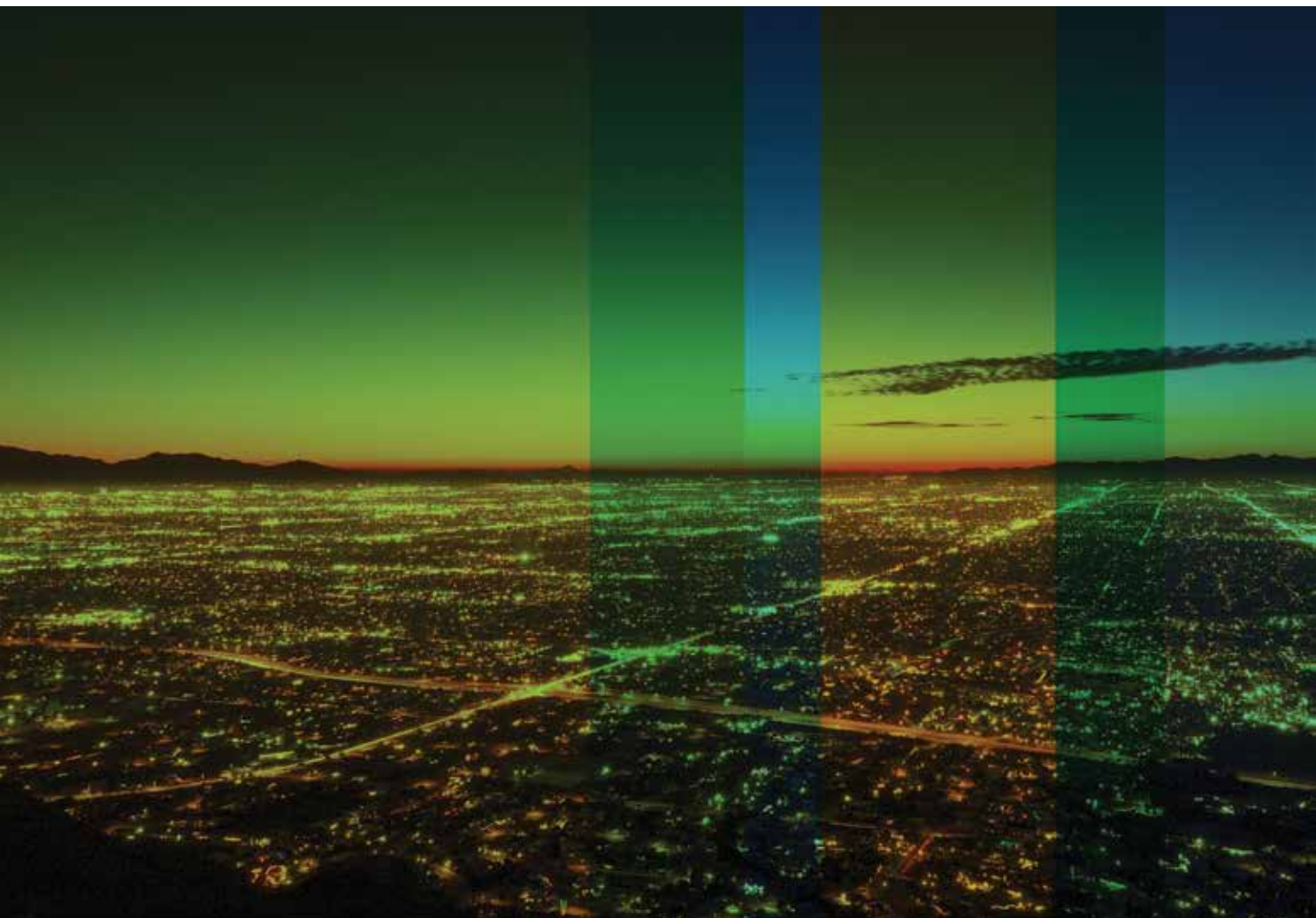
Every efficiency. Every savings. Every gain.
With leading-edge chemistry and boundless
commitment, Buckman is ready to pursue
every horizon.

To start your journey, contact your Buckman
representative or visit buckman.com.

TELL US ABOUT YOUR HORIZONS.
WE'LL HELP YOU REACH THEM.

Buckman

Commitment makes the best chemistry.



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