

Green Innovation

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3M Display & Graphics Business



3M's First Customer Inspired Innovation...

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The Bar is Always Being Raised...

Does it stick?

Does it come off cleanly?

Does it handle well?

Can it survive temperature extremes?

Is it "greener"?

Greener: A New Requirement



Pollution Prevention Pays



Dr. Joe Ling:

“Pollution is ... unused raw material. By reducing the amount of pollution, ... [3M can] save money both on pollution control and on raw materials the next time around. It's a win-win situation.”



- Environmental benefits can occur within 3M or for our customers & suppliers.
- Today 3P is a fundamental 3M philosophy

3M's 3P Results

(aggregate first year savings)

- Over 3 billion pounds of pollution prevented
- Over \$1.4 billion saved

Dr. Ling launched 3M's Pollution Prevention Pays program in 1975



Achieving Green Chemistry

- Reformulate
 - Modify existing products
- Redesign
 - Radical product change
- Replace
 - Substitute solution



Reformulate – Post-It® Greener Notes



Reformulating the product most widely associated with 3M

Start with a Business Sustainability Strategy

Global Sustainability Growth Strategy

- Position Post-it® Brand as the sustainability global market leader by migrating existing/new products to greener solutions
- Continue to adapt to evolving consumer and regulatory requirements to stay ahead of the curve and introduce sustainable products desired by consumers.

Sustainable Competitive Advantages

- Provides product differentiation for customers
- Extends category leadership position globally
- Reduces dependence on petroleum-based materials
- Patentable 3M technology



Post-it® Greener Notes

- Same performance expected from Post-it® Notes
- Made from 100% recycled paper with 30% PCW
 - *No new trees were used.*
- Certified by SFI / PEFC for chain of custody
- Made with 67% plant-based adhesive
 - *The plant material used to make the adhesive was replenished after harvesting.*
 - *Does not compete with the food chain*
- Recyclable



A vertical banner for Post-it Greener Solutions. At the top is the Post-it logo. Below it, the text 'Greener Solutions' is written in green. The banner contains several environmental claims: 'All Post-it® Notes are recyclable' with a recycling symbol, 'All Post-it® Notes are from forests where trees are replanted.' with a tree icon, and 'Certified by SUSTAINABLE FORESTRY INITIATIVE' with a tree icon. At the bottom, it says 'All Post-it® Notes are' with an American flag icon and 'Please recycle.' in a green box.

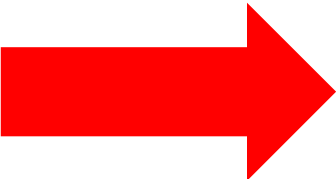
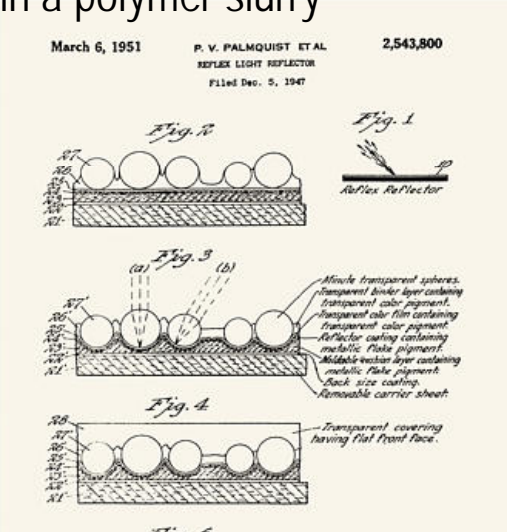


Redesign – Prismatic Retroreflective Sheeting

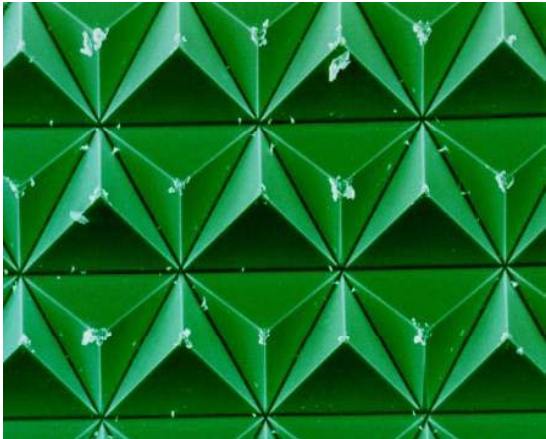


- Improving safety through better visibility
- AND
- Reducing environmental impact

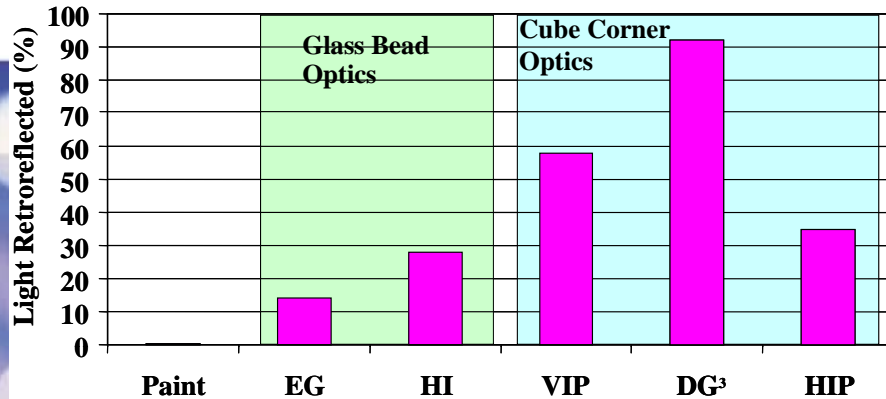
FROM: A 1940 process using glass beads in a polymer slurry



TO: Microreplication process



Better in Every Way



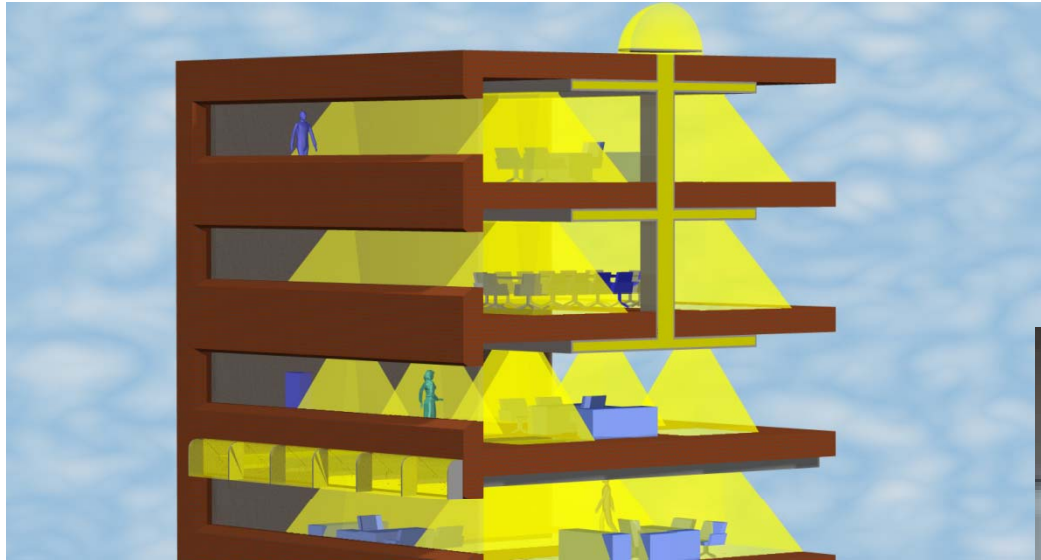
- First product launched in mid-90's, after a 17 year development
- Green chemistry & good business:
 - *Process steps cut by 70%*
 - *Cycle time cut by 75%*
 - *Solvents eliminated*
 - *3 Waste liners eliminated*
- Today a full line of microreplicated sheetings available worldwide, beaded sheetings being phased out

Prismatic Migration Impact

- Improved safety through higher visibility
- Reduced environmental impact:
 - *High Intensity Prismatic vs. encapsulated lens sheeting:*
 - *Reduces manufacturing waste by 46%*
 - *Reduces manufacturing VOC emissions by 97%*
 - *Reduces manufacturing energy use by 77%*
- Reduces the need for lighting road signs, saving energy



Replace – Using the Sun Instead of Electricity

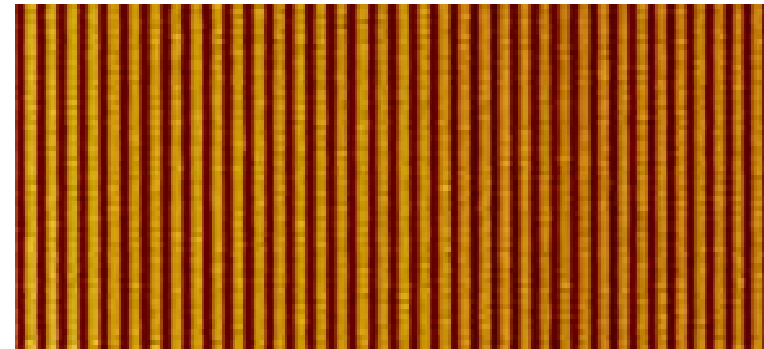
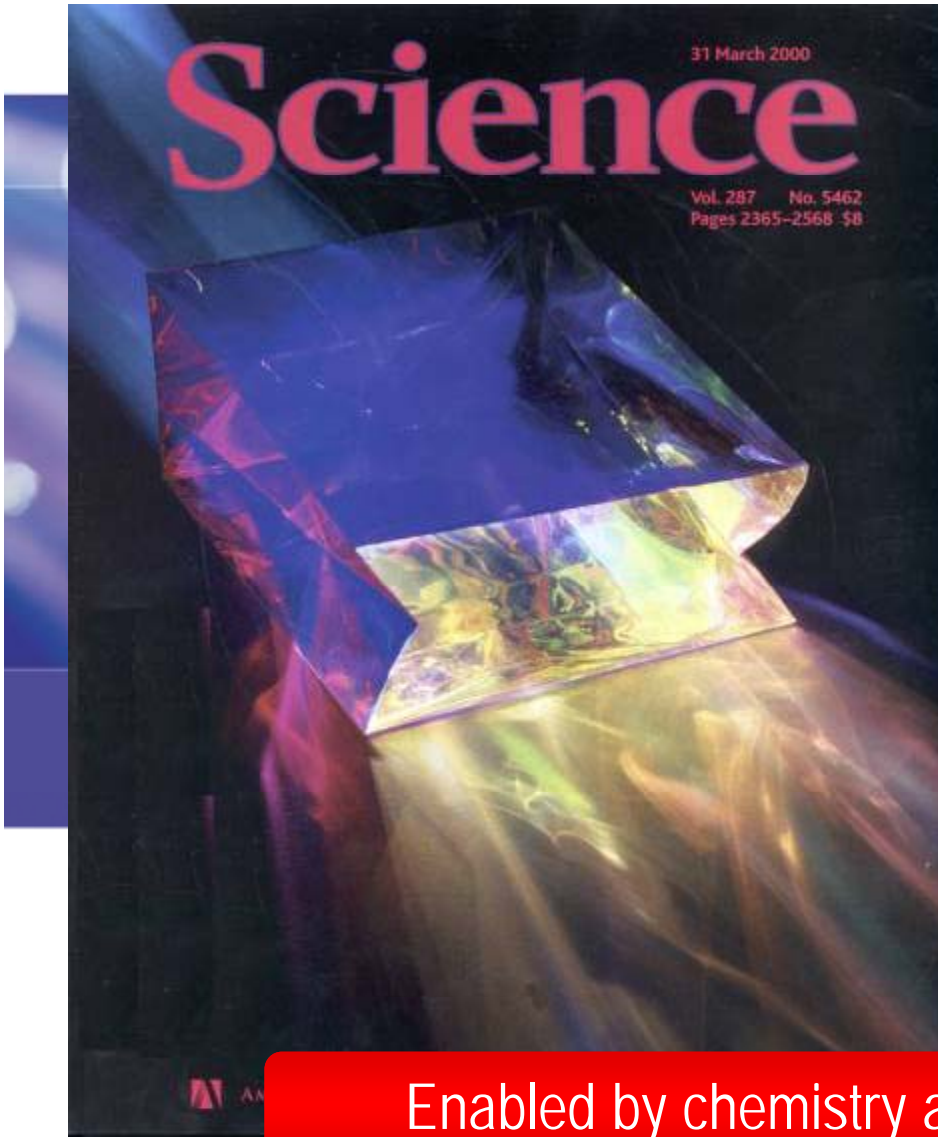


“Piping” sunlight through a building

- Enabled by 3M Multilayer Optical Film
- Materials & process breakthroughs



3M Innovation - Multilayer Optical Films



Hundreds of precision layers, all in a film no thicker than a human hair

Results of this technology:

- World's highest reflectivity mirror film
- World's only commercial reflective polarizer

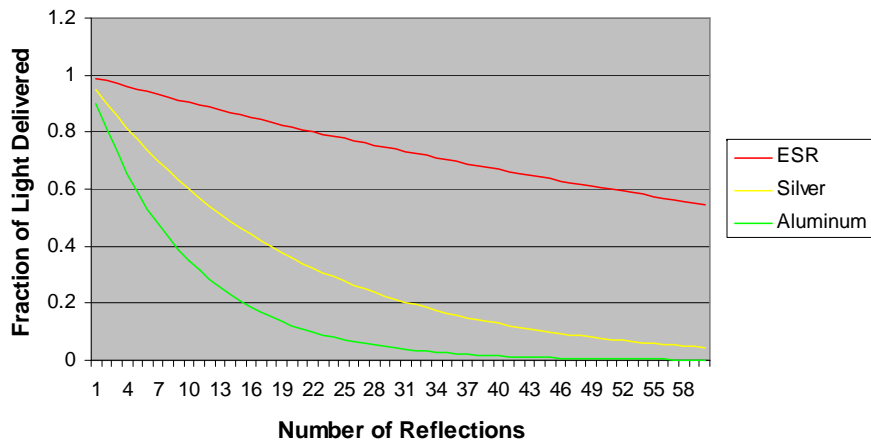
Enabled by chemistry and process innovation



3M High-Efficiency Mirror

a - High Efficiency Mirror
b - Aluminum
c - Silver

Efficiency



Summary

- The requirement of “greener” raises the bar, but that is something we’ve been doing for decades
- Innovation to achieving “greener”:
 - *Reformulate*
 - *Redesign*
 - *Replace*
- Pollution Prevention Pays

Good for business. Good for the earth.

