

# Energy Efficiency Solutions

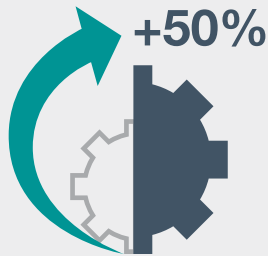
PASCAL™ Technology – The Polyurethane Breakthrough Solution of Choice for Advanced Appliance Manufacturing

Seek **Together**™





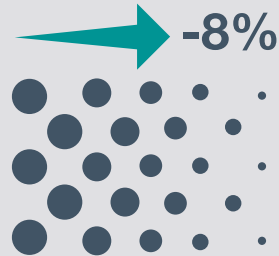
PASCAL™ technology from Dow is a patented polyurethane technology that helps household appliance manufacturers to increase energy efficiency at sustained design quality and production costs. The technology works with any blowing agent of choice, including the latest generation of low Global Warming Potential (GWP) blowing agents, such as HydroChloroFluoroOlefins (HCFOs) and HydroFluoroOlefins (HFOs). The PASCAL™ breakthrough technology can bring key advantages:



**50% greater  
PRODUCTIVITY**

**Improved productivity**

PASCAL™ helps to achieve up to 50% demold time reduction. This significantly improves cycle times and productivity for manufacturers.

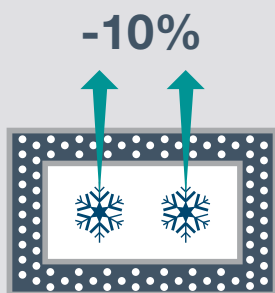


**Up to 8% less  
RAW MATERIALS USED**

**Reduced raw material spending**

Using the PASCAL™ foam technology, manufacturers are able to decrease raw materials usage by up to 8%.

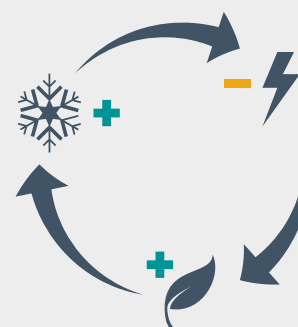
With these features, PASCAL™ is the technology of choice for advanced appliance manufacturing.



**10% greater  
ENERGY EFFICIENCY**

**Advanced energy efficiency**

PASCAL™ technology from Dow allows appliance manufacturers to meet stringent government regulations by achieving up to 10 percent energy efficiency improvement over current polyurethane insulating solutions for refrigerators and freezers.



**More than 10% reduction in  
CARBON FOOTPRINT**

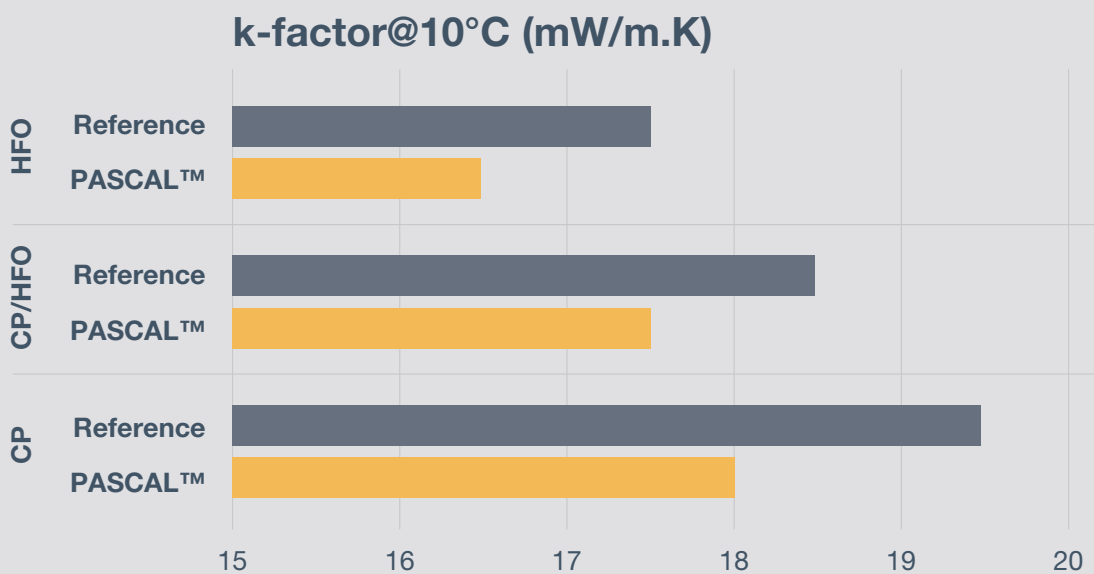
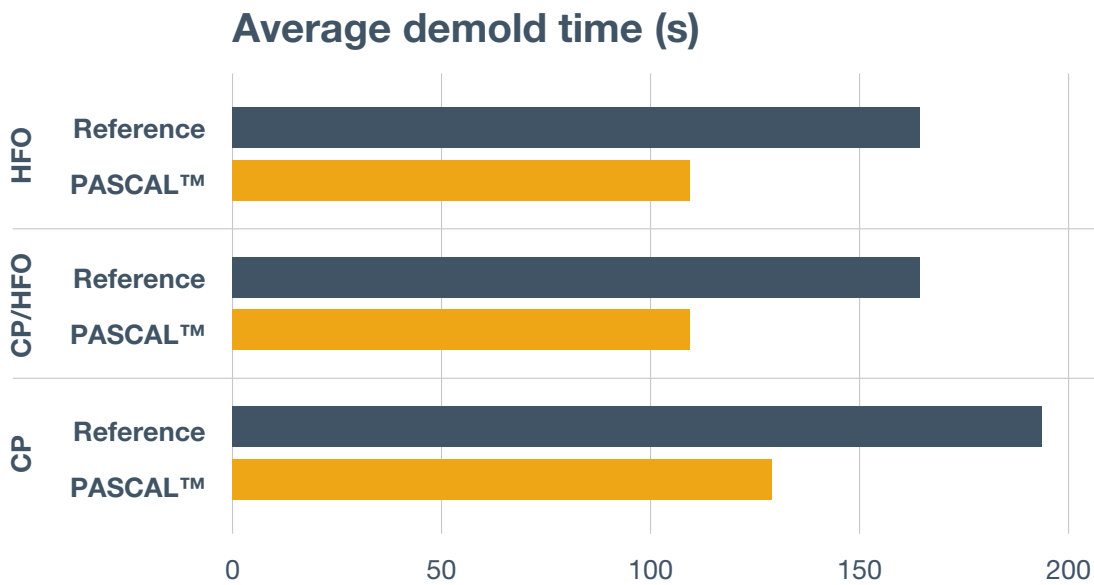
**More sustainable appliance solution**

PASCAL™ technology helps to improve the sustainability profile of household refrigerators and freezers by decreasing electricity usage due to better thermal insulation. When PASCAL™ technology is used in place of typical appliance polyurethane insulation, it may save up to 16 kg of CO<sub>2</sub> per refrigerator unit equivalent emissions per year<sup>1</sup>.

<sup>1</sup> Life Cycle Assessment according to (AHAM 7001-2014/CSA SPE-7001-14/UL 7001)

# Compare the Difference

## How the PASCAL™ system can help you and your Business



**Legend**

CP: cyclo-Pentane, HFO: Hydrofluoroolefins, CP/HFO: cyclo-Pentane co-blown

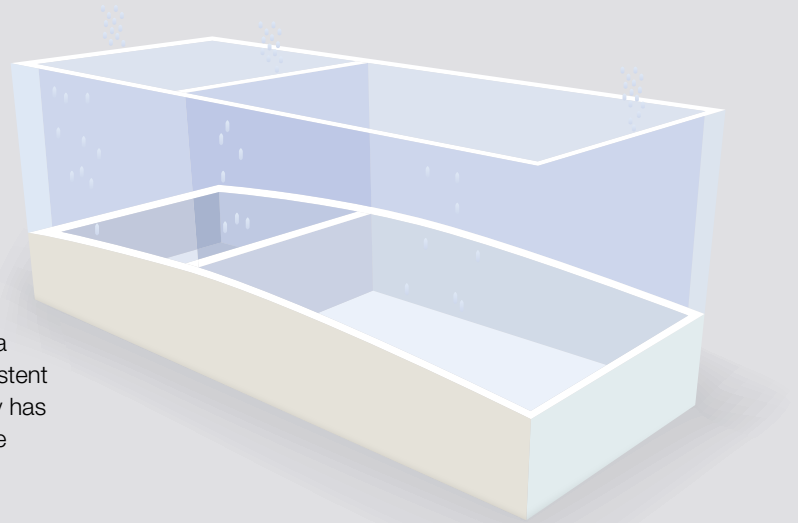
Typical properties, not to be construed as specifications.

\*Average results compare PASCAL™ Technology against standard polyurethane insulation using various blowing agents together with current process.

As a manufacturer in the household appliances business, you know it's important to improve energy efficiency to meet new regulations as well as consumer expectations. You also know that adding energy efficiency improvements often limits design and reduces interior space in appliances. Now there's a better solution.

### What PASCAL™ Technology is about

PASCAL™ is an innovation technology which is using a polyurethane system solution that significantly increases household appliance energy efficiency performance at sustained design and productivity. The technology allows a step change in energy performance, while offering a consistent and quality manufacturing process. PASCAL™ technology has been implemented by Dow at leading household appliance manufacturers.



### How the System Works

PASCAL™ technology uses a vacuum assisted injection process to fill the insulating cavity. The combination of specially formulated systems and vacuum assisted process enables an effective and consistent cavity filling with less insulation material.

Figure 1: Schematic drawing PASCAL™

### Sustainability in Action

PASCAL™ technology is one of many innovative products and technologies from Dow that improve energy efficiency. Dow connects chemistry and innovation with the principles of sustainability, which include developing solutions for energy efficiency and climate change. Dow's commitment to sustainability includes an ambitious set of goals focused on solving some of the world's most pressing problems and reducing our own global footprint.

PASCAL™ technology works with any blowing agents available today.

You can use the newest, **very low GWP** (Global Warming Potential) blowing agents, such as Hydro-Fluoro-Olefins (HFOs).

For the environmental impact categories of Life Cycle Assessment, PASCAL™ technology enables **10% improved sustainability index in all categories according to global standards.**

When PASCAL™ technology is used in place of current typical appliance polyurethane insulation, it may save 16 kg of CO<sub>2</sub> per refrigerator unit equivalent emissions per year.

For more information on Dow's sustainability commitments, visit [www.dow.com/sustainability](http://www.dow.com/sustainability).

### Efficient in Implementation

Implementing PASCAL™ technology is typically related to the same to lower investment costs for operations as traditional polyurethane insulation technologies, yet this leading-edge appliance manufacturing technology can lead to vast improvements in energy efficiency and productivity.

### How Can We Help Improve Your Operation?

To learn more about PASCAL™ Technology and how it can benefit your business, contact a Dow representative in your region.

Or visit our website at [www.dowpascal.com](http://www.dowpascal.com)



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