



# 6 Time-Saving Advantages

Pyrogel® & Cryogel®  
Insulation in  
Turnarounds &  
Maintenance

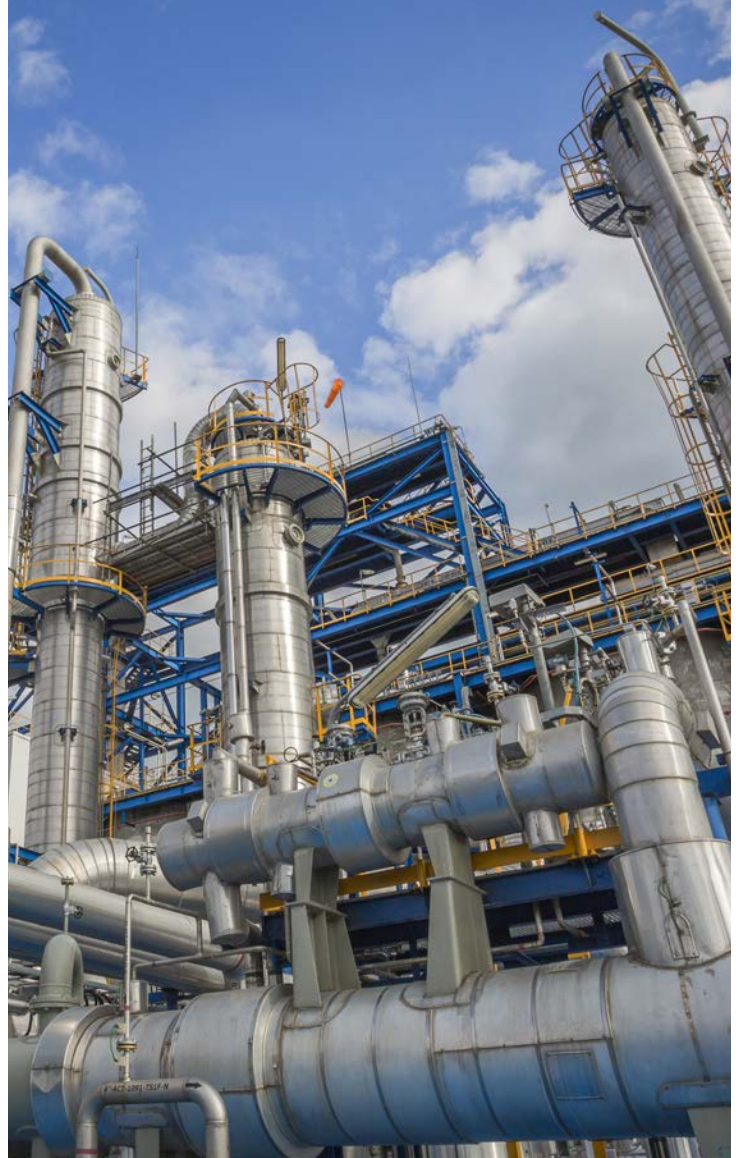
aspen|aerogels®

## 6 Time-Saving Advantages of Pyrogel® & Cryogel®

Turnarounds and maintenance events are challenging. Repairs, inspections, and replacements must happen within a tight timeframe. Inevitably, thermal insulation needs to be removed and replaced to complete these tasks—usually at the end of the turnaround process when your schedule is under pressure. The last thing you need is to fall behind because of your mechanical insulation.

**How can your choice of insulation help keep your maintenance plan on schedule—even support faster re-insulation times during turnarounds?**

Read on for six time-saving advantages of Pyrogel® and Cryogel® aerogel blanket insulation in turnarounds and shutdowns.



***“The last thing you need is to fall behind schedule because of your mechanical insulation”***

## Benefits of

## Pyrogel® & Cryogel®

Aspen Aerogels® uses a patented process to integrate aerogel—the world’s best insulator—into a fiber-batting reinforcement to create versatile, resilient, and durable aerogel blankets with industry-leading thermal properties.

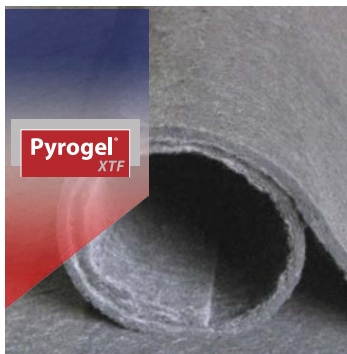


### HIGH TEMPERATURE INSULATION

Pyrogel® HPS is engineered to provide optimal thermal performance and value at service temperatures up to 650°C (1200°F). With its extremely low thermal conductivity, Pyrogel HPS is up to 75% thinner than competing high temperature insulation materials. Pyrogel HPS is designed to provide long-term performance for the ultimate in safety, process efficiency, and stability, in the power generation, refining, and chemical processing industries.

### HIGH TEMPERATURE INSULATION

Pyrogel® XTE is the most effective high-temperature mechanical insulation available today. Typically, 2-5 times more efficient than other widely used insulation products, Pyrogel® XTE high-temperature insulation is versatile, durable, and supports faster lay rates across a range of industrial applications.

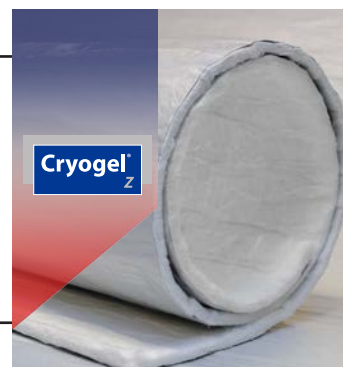


### HIGH TEMPERATURE INSULATION AND PASSIVE FIRE PROTECTION


Pyrogel® XTF delivers all of the benefits of Pyrogel® XTE with the addition of passive fire protection. This lighter, thinner insulation option supports up to 2 hours of passive fire protection under the ISO 22899-1 standard, and represents the thinnest solution at higher 350kW/m<sup>2</sup> flux, Pyrogel® XTF can be applied without process interruption and offers immediate protection.

### CRYOGENIC INSULATION

Cryogel® Z cryogenic insulation is the highest performing flexible, below ambient to cryogenic insulation used in the oil and gas processing industry. Cryogel® Z reduces thicknesses by 30%-80%. With a factory-applied vapor barrier and flexible blanket form, Cryogel® Z is both fast to install and durable, resulting in lower-cost, higher performing designs.







# 1 Speed of Application


The unique combination of a space-saving, flexible format and best-in-class thermal performance is impressive, but what if your choice of mechanical insulation could also support faster completion of your turnaround?

## **Can your choice of insulation really make a difference?**

In many cases, yes—of course, the exact benefit depends on the size of your pipe or vessel. This positive impact on turnaround schedules is exactly what many customers of Aspen Aerogels report. While time-savings are reported on applications throughout the facility, the biggest scheduling reductions are seen on large-bore piping, equipment, vessels and tanks. Pyrogel® and Cryogel® offer more insulation coverage per man hour than traditional forms of insulation.

The table on page 5 highlights five recent turnarounds where Pyrogel and Cryogel insulation saved time.

## Reported Turnaround Experiences

Location	Unit	Products	Aspen Aerogel Advantage	Overall Impact
<b>Gulf Coast Refinery</b>	Vertical Reactor 20' OD 60' T2T		Faster application relative to Perlite	TAR task completed in 1578 man-hours vs 3800 allocated
<b>Midwestern Refinery</b>	Divided Wall Column		Faster application relative to Perlite	TAR task completed in 1 day (3 allocated)  Allowed crew to contribute on other units
<b>Gulf Coast Petrochemical</b>	Whole Plant		Faster application  Combined acoustic, CUI and condensation control protections	Earlier handover of units  Increased CUI defense
<b>North Sea Platform</b>	Vessel		Onshore pre-fabrication  Faster application  Simplified logistics  Space savings	13 project shutdown days saved  39 man days saved  30-35% project cost reduction  Reduced off-shore wastage
<b>Midwestern Refinery</b>	Hydrotreater		Reduced thickness of insulation layer	95% of pipework insulated prior to test and re-start  Safer operating environment during restart  Ready access to flange bolts during hydrostatic testing  Reduced trade stacking

## Easy as 1 - 2 - 3

Pyrogel® and Cryogel® also create significant logistical advantages.

**Think about traditional forms of insulation:**

- Do you need to wait for special-order parts?
- How many SKU's are needed?
- What about storage space?
- Breakage?

A single roll of either Pyrogel or Cryogel can be used to protect practically any operating unit, from the smallest pipe to the largest vessel.

Rather than managing a large staging area of multiple insulation shapes and sizes, use of Pyrogel and Cryogel significantly reduces material handling and inventory management on big jobs.

# 1 2 3

**Format Thicknesses Products**

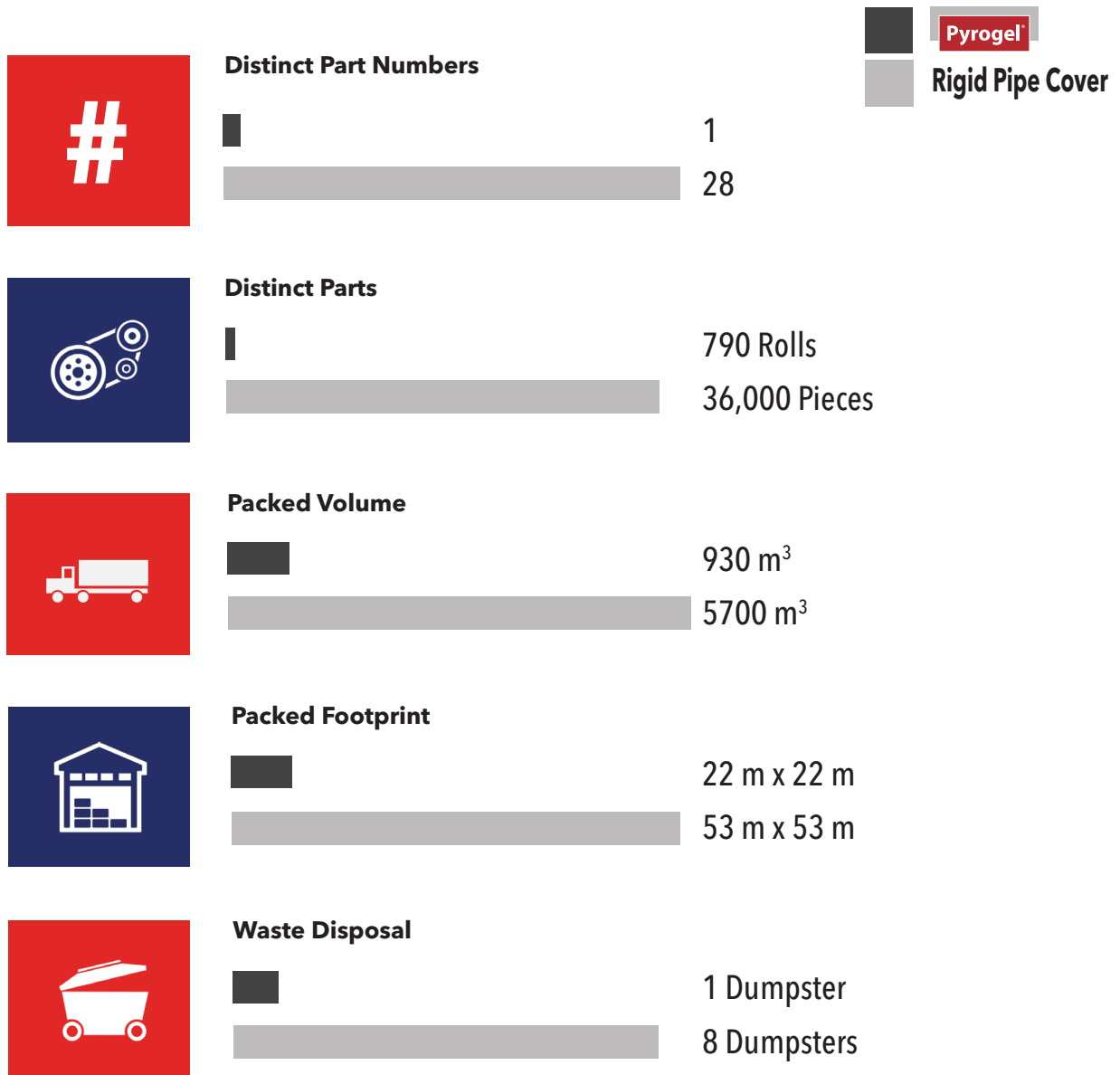
**Pyrogel® High Performance Industrial Insulation**

## 2 Simplified Logistics



# Simplified Inventory Management & Logistics

Reported from a trade study, these are typical numbers involved in an insulation project.



The time spent ordering, unloading, warehousing, staging, and transporting insulation provides little value-add to your turnaround. These costs can be avoided with the simplified logistics provided by Pyrogel® and Cryogel® aerogel insulation.

### 3 Reduce Cost Through Re-use



In areas that require the removal of insulation for inspection purposes, both Pyrogel® and Cryogel® can be removed and reused multiple times.

**One North American refinery reported that Pyrogel had been removed and reused 6 times and was still in service.** The incumbent insulation, however, did not survive the initial use and had to be scrapped.

Having the ability to remove insulation quickly not only gives your turnaround team the added insurance to stay on schedule, it also extends the service life of the protection layer over many inspections.

An added benefit of reuse? Costs related to storing and transporting spare parts, plus man-hours spent managing inventory and re-insulating after inspections are also avoided.





With their excellent thermal properties, Pyrogel® and Cryogel® also resist the other enemies of traditional insulation: water and mechanical damage.

Turnaround activity like tool strikes, footfalls, and even expansion-contraction cycles during recommissioning can damage thermal insulation and protective jacketing. Pyrogel and Cryogel are tough enough to withstand the abuse.

Mechanical damage can also lead to trapped water within rigid thermal insulation systems, excessive heat loss, corrosion under insulation (CUI), and ice formation.

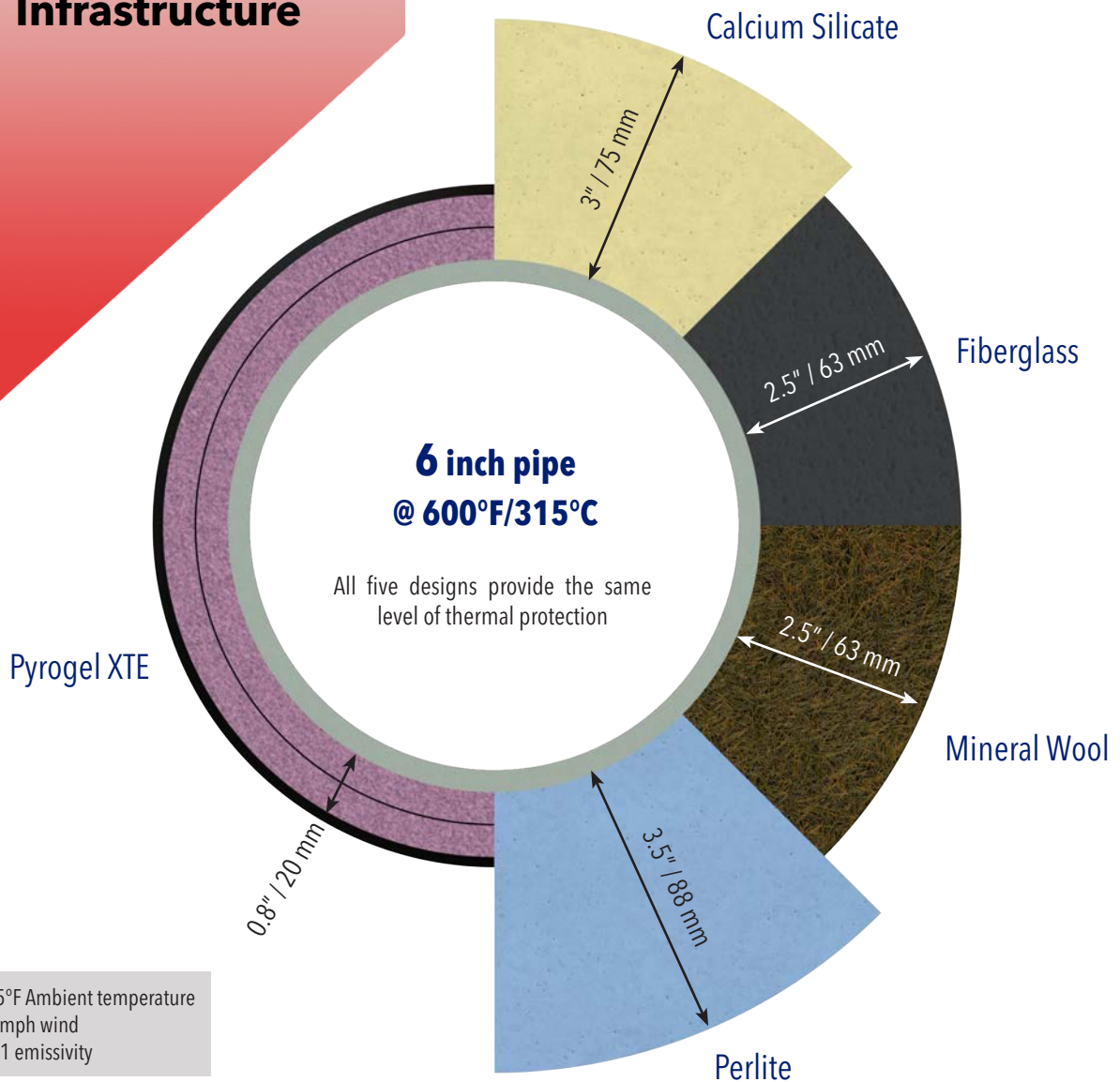
Use insulation that will resist water and mechanical damage, and keep your turnaround on schedule. You'll protect your two most important assets—your people and your plant—better and for longer.

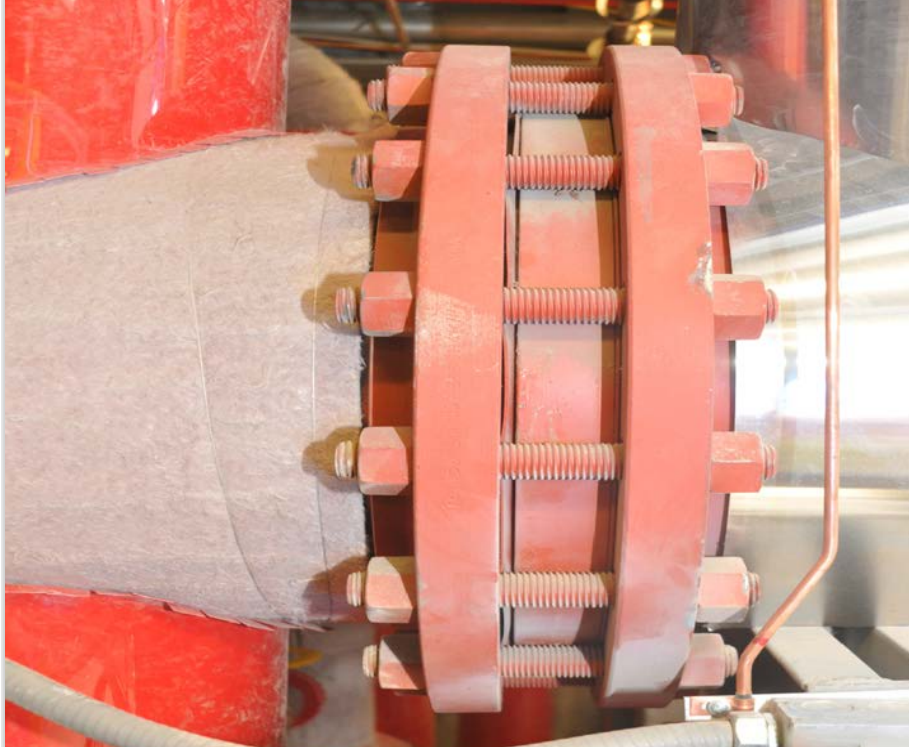
## **4 Superior Asset Protection**

## 5 Resolve Mechanical Clashes and Maximize Infrastructure

Turnarounds may require the addition of new infrastructure to the existing processing unit. Space-constrained areas and tight configurations are particularly problematic.

Both Pyrogel® and Cryogel® offer the lowest thermal conductivity of any mechanical insulations in hot or cold service. This industry-leading performance translates directly into thinner insulation profiles—a crucial benefit when resolving mechanical clashes on your project.





An often overlooked benefit of Pyrogel® and Cryogel® during turnarounds is the ability to easily access flange bolts during the recommissioning access.

In traditional mechanical insulation, areas around the flange bolts may be damaged during bolt tightening. Re-insulation will be necessary, further delaying the handover process. To prevent these added costs, flange areas may lack the proper amount of insulation, increasing energy inefficiencies and the risk of injury to personnel and assets.

Due to its ultra-thin profile, Pyrogel insulation can be installed right up to the flange face. If bolt tightening is required, you'll avoid damaging adjacent insulation and jacketing, and eliminate the need to remove and re-install insulation.

Recommissioning service can be completed safely and on schedule without compromising the efficiency of the unit.

## **6 Start-up Service Access**

# Summary

In Turnarounds and Maintenance Events, Save Time and Drive Value with Pyrogel and Cryogel.



Pyrogel & Cryogel have demonstrated time-saving advantages for TARs



Earlier handover of units contribute to reduced delay potential



Simplified product logistics avoid trade stacking and wait times



Increased CUI defense, combined protections and safer commissioning environment



Resilient protection = superior process stability



Removable and reusable for future inspections, lower total cost of ownership



## Learn More about Aspen Aerogels & Pyrogel® and Cryogel® Insulation

Pyrogel and Cryogel can keep your turnaround on schedule by offering:

- Faster Application
- Simplified Logistics
- Reduced Costs Through Reuse
- Superior Asset Protection
- Resolved Mechanical Clashes & Maximized Infrastructure
- Start-up Service Access

Make your turnaround and maintenance projects more efficient with Pyrogel and Cryogel.

**Do you have questions or are you ready to discover more?  
Request a site visit or speak with one of our Technical Service experts.**

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