

# Microporous Insulations Rises to Defence Challenges

[ThermoDyne](#)

**M**icroporous insulation systems engineered by ThermoDyne are consistently able to meet the challenges presented by the ever-changing environments associated with modern conflicts, while also providing considerably higher value performance and reliability than conventional insulation systems

Materials and components are continually being forced to evolve to accommodate the ever-changing environments associated with modern conflicts. As a result, an increased emphasis is being placed upon making weapons, weapon delivery systems, and the people who operate them more efficient, stealthy, and "intelligent". These goals can often only be achieved by resorting to ever higher performance materials and technical innovations.

## Aerospace

Air superiority is increasingly important in scouting and surveillance, ground attack and in providing air support for ground forces. However, as anti-aircraft weapons technology improves, and as aircraft are being required to be increasingly versatile across a number of roles, so is the overall performance of aircraft through weight and IR signature reduction, heat management, improved efficiency and space consolidation becoming more important.

Microporous insulation is typically the best solution to these challenges as it performs superbly in temperature extremes, can be fabricated to survive the

often severe service environments, provides the absolute maximum of thermal efficiency within minimum space and weight parameters, and can act as an effective heat shield or fire barrier in the event of a fire.

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## Maritime assets

Although today's naval vessels and coordinating support systems are increasingly capable of greater and greater technological feats, they, like their groundforce counterparts, are being required to operate within more demanding performance, space and weight constraints. As a result, microporous insulation systems are ideal for use as fire barriers in applications such as bulkheads, deckheads and equipment, as well as insulating systems for nuclear power plants. Already used in a number of non-military conventional and auxiliary power units, microporous insulation systems are easily adaptable to modern naval vessels.

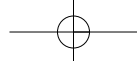
## Ground forces

Ground forces increasing need maneuverability, speed, stealth profile and energy/fuel efficiency to achieve long range, unsupported penetration and survivability against the increasing ability of enemy aircraft and missile systems to detect and destroy them. As a result, any decrease in the weight of the insulation necessary for a ground, cavalry or supporting unit's vehicles and systems improve the vehicles' engines/powerplants' efficiency while reducing the IR signature.

## Munitions

"Smart" munitions, capable of accurately targeting and adjusting to their targets while en route from the launch mechanism to the target (or targets), require special avionics, thermal batteries and electronics hardware on the unit itself, as well as insulation systems that are capable of protecting those hardware systems from the heat associated with the propulsion unit, air friction, or other heat sources.

In addition, because munitions are continually shrinking in size - relative to their overall effectiveness - space and weight of both the overall system and its individual components are of critical importance. Only microporous insulation systems provide the flexibility necessary for such applications and are becoming the thermal management solution of choice for today's demanding munitions standards.



**Corporate Feature**

Today, performance benefits of ThermoDyne's microporous insulation systems, originally developed for use on military and related government programmes, include:

**Weight reduction**

Thermodyne systems are ideal for applications where additional weight must be only minimally increased, or where overall or system weight needs to be reduced. Typically, ThermoDyne's microporous insulation systems weigh only 50 to 75 per cent as much as conventional alternatives (including ceramic fibre blanket and similar products), allowing either overall weight savings or greater weight allotment and distribution for other or additional critical systems.

**Thermal management**

Among the most thermally efficient insu-

lation materials in the world, ThermoDyne materials have thermal conductivity values even lower than those of still air. Because they are also capable of withstanding temperatures in excess of 1,800 °F (1,000 °C), and are fabricated into an insulation system extremely resistant to wear, thermal shock and hostile environments, they have been used in military/defence-related applications across all armed services.

**Space efficiency**

In military vehicles and equipment, where critical weapons, electronics and related systems have to be accommodated, ThermoDyne's systems are capable of liberating space without sacrificing (and in many instances, even improving) thermal performance, as their thickness will be only 75 per cent that of conventional insulations.

**Fire protection**

ThermoDyne materials are able to withstand temperatures above 1,800°F (1,000°C), and can be fabricated to form countless complex-shaped systems for fire protection applications. ■

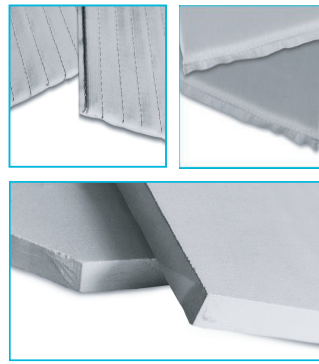


**Contact information**

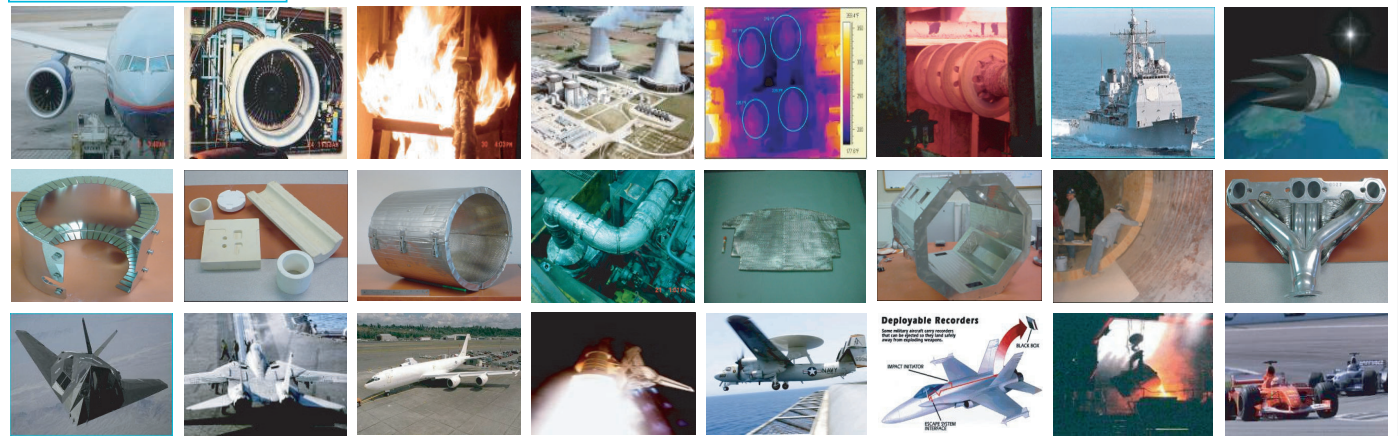
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