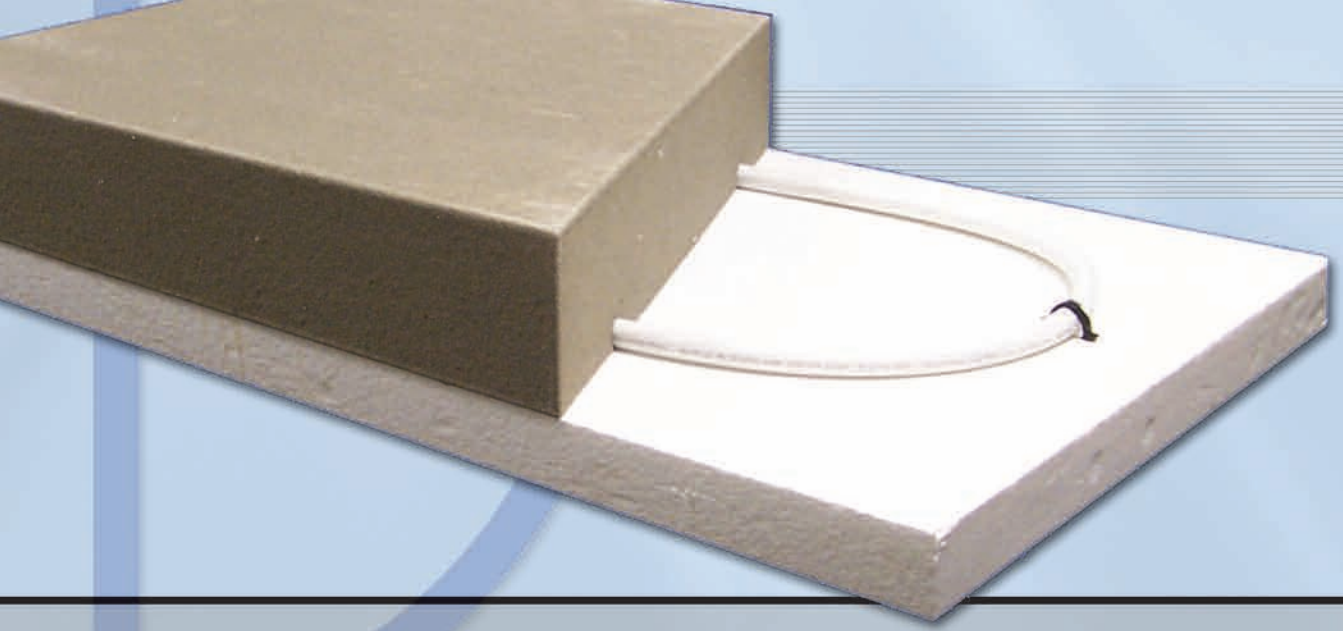
HIGH-DENSITY EPS
by Benchmark Foam

Benchmark Foam's High-Density EPS is ideal for many applications requiring high-strength insulation board.

Benchmark Foam's high-quality expanded polystyrene (EPS) is less expensive than alternative forms of rigid insulation, giving you the best value in the industry. When you choose Benchmark Foam, you receive superior and versatile products from a Midwest manufacturer with the only **On-Time Guarantee** in the industry, combining the best in quality, service and value for you and your customers.

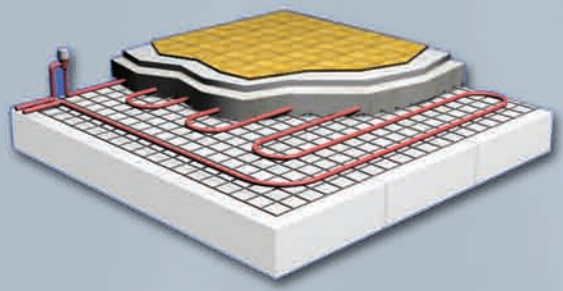
BENCHMARK FOAM INC.

Quick response is our guarantee.



BUILD GREEN WITH BENCHMARK FOAM

Benchmark Foam's High-Density EPS can help you achieve Green Building standards. The thermal protection attained with rigid under-foundation and perimeter insulation increases energy efficiency and provides the thermal envelope often required in Green Building.



Benchmark Foam's High-Density EPS is an excellent thermal barrier beneath a concrete slab. It is also very effective in combination with in-floor heat applications.

HIGH-DENSITY EPS APPLICATIONS

Benchmark Foam's High-Density Expanded Polystyrene (EPS) can be used in many applications where high-strength insulation board is required. It is especially ideal as a thermal barrier for in-floor heating applications and beneath concrete slabs, as well as perimeter insulation and pre-cast concrete walls.

UNDER-SLAB THERMAL BARRIER

Installing Benchmark Foam's High-Density EPS as a thermal barrier before pouring a concrete slab will reduce heat loss and prevent possible heaving. The additional insulation also makes the home or work area more comfortable.

IN-FLOOR HEATING

Use Benchmark Foam's High-Density EPS as a thermal barrier beneath the concrete slab when installing a radiant floor heating system. It will prevent heat loss to the ground and promote even heating where you want it during the heating season. This is especially important in areas with a high water table because water will quickly conduct heat away from a home. The insulation will also block heat from being stored in the ground and then leaching back into the home when you want to keep it cool.

PERIMETER INSULATION

To prevent heat loss, install Benchmark Foam's High-Density EPS around the perimeter of a poured concrete or block wall foundation. For shallow foundation designs, Benchmark Foam's High-Density EPS around the perimeter of a poured concrete slab will prevent frost penetration as well as both normal and tangential frost heaves.

PRE-CAST WALLS

Because EPS retains a stronger bond with concrete than extruded foams, Benchmark Foam's High-Density EPS is ideal for pre-cast walls. Benchmark Foam is able to customize panels to your needs – whether your design calls for extra-large panels or special shapes.

ADVANTAGES OF BENCHMARK FOAM'S HIGH-DENSITY EPS IN YOUR APPLICATION

DESIGN FLEXIBILITY

When standard shapes and sizes will not work, Benchmark Foam will work directly with contractors or designers to create a product that will conform to customer needs. We are customizing experts.

COST EFFICIENT

Benchmark Foam's high-quality EPS is the best value in the industry, giving you the most R-value per dollar spent. For the same cost as you would spend with our competitors, you can add thickness to your EPS insulation and achieve a greater level of thermal protection with Benchmark Foam's High-Density EPS.

EXCELLENT THERMAL PERFORMANCE

The high thermal performance of Benchmark Foam's High-Density EPS will keep heat where you want it and reduce energy costs.

EFFECTIVE CONCRETE BOND

When used in concrete applications – whether under a poured slab or with pre-cast walls – EPS bonds effectively with the concrete to create a durable, fully integrated slab or wall.

ENVIRONMENTALLY CONSCIOUS

Because caring for the environment is important to us, Benchmark Foam products do not contain formaldehyde, nor do we use CFCs, HFCs or HCFCs as blowing agents. You can be confident in the environmental safety of our product. Benchmark Foam also recycles by accepting used, clean, dry EPS to remanufacture into 100 percent recycled products.

ON-TIME GUARANTEE

Benchmark Foam knows that your business depends on our product arriving on time. Our service response is so dependable we back it with Benchmark Foam's On-Time Guarantee. Your product will be shipped and arrive by the agreed-to arrival date or we will **discount your invoice 10 percent.** We work to accommodate customer needs, giving you confidence when you place an order, even if it needs to be rushed. And we do not have truckload quotas, so no matter how large or small, your order will be shipped on time.

Benchmark Foam's High-Density EPS can be used as perimeter insulation either on the exterior or interior of poured cement or block walls. EPS has a very effective bond with concrete, making it the best insulation option for use in pre-cast walls.

PHYSICAL PROPERTIES OF EPS

Specification Reference ASTM C578-08				***Type II***	***Type IX***
Property		***Units***	***ASTM Test***		
Density, nominal				1 1/2#	2#
Density, minimum		(pcf)	C303 or D1622	1.35	1.80
Thermal Conductivity	at 25F	BTU/(hr.)	C177 or	0.217	0.208
KFactor	at 40F	(sq.ft.) (F/in.)	C518	0.227	0.217
	*at 75F			0.250	0.238
Thermal Resistance	at 25F	at 1 inch		4.60	4.80
Values (R)	at 40F	thickness	–	4.40	4.60
	*at 75F			4.00	4.20
Strength Properties, minimum					
Compressive 10% Deformation		psi	D1621	15.0	25.0
Flexural		psi	C203	35	50
Tensile		psi	D1623	18	23
Shear		psi	D732	26	33
Shear Modulus		psi	–	460	600
Modulus of Elasticity		psi	–	320	460
Moisture Resistance, maximum					
WVT (water vapor transmission)		perm./in.	E96	3.5	2.5
Absorption (vol.)		%	C272	less than 3.0	less than 2.0
Capillarity		–	–	none	none
Coefficient of Thermal Expansion		in./(in.) (F)	D696	0.000035	0.000035
Maximum Service Temperature		°F	–		
Long-term				167	167
Intermittent				180	180
Flame Spread		UL®	E84	20	20
Smoke Development		UL®	E84	300	300

All values based on data available from Flint Hills Resources, NOVA Chemical Company, and BASF Corporation.
*Federal Trade Commission ruling: Use the 75° R-value when calculating R-values for residential construction (fact sheets available upon request).

DESIGN CONSIDERATIONS

Flammability: Like many construction materials, EPS is combustible. It should not be exposed to flame or other ignition sources. Current building code requirements should be met for adequate protection or separation from occupied areas.

Water Absorption Properties: EPS water absorption is low. Moisture takes the path of least resistance and travels around individual beads rather than through them; the non-interconnecting cell structure prevents capillary absorption.

Water Vapor Transmission: EPS has low permeability but is not considered a vapor barrier.

Solvent Exposure: EPS is subject to attack by petroleum-based solvents and adhesives, and coal tar pitch products. Care should be taken to prevent EPS direct contact with these products and their vapors. Use only adhesives approved for EPS applications.

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Call today to see how our unique capabilities can benefit you!