



softwell insulation

The ideal thermal insulation





"SOFTWELL" PFF (Polyethylene Fireproof Foam) Insulation Material)

"SOFTWELL" PFF is a high-performance of heat-insulation and noise-absorbing materials developed after painstaking researches. The materials are formed from foamed high molecular polymers that have been chemically bridged, having tiny independent cells. Hence, the materials have very low coefficient of heat conductivity, low hygroscopic coefficient, and can withstand heat or cold, or chemicals. They are also hard to burnt and can effectively prevent cold surface freezing and heat radiation of thermal systems. Being the best product ever in today's insulation material market, they have great economic benefits.

Uses of PFF Insulation Materials:

- **Refrigerating air-conditioning:** Widely used for heat and cold insulation in refrigerating and cooling equipment like water and wind pipes of large central air conditioning systems, cooling plants, refrigeration storage houses, ice water main frames, cooking machines, cold wind pipes, cold water pipes etc.
- **Civil engineering:** For heat-insulation, noise-absorption, or water resistance of the roof, wall and ceiling decoration of plants, storage houses, apartments, plazas, and general residence buildings.
- **Fire and water pipes:** For areas to the north of the Yangzhi River, the temperature usually drops to below -25°C in winter. In order to protect the pipes from freezing, prevention measures shall be taken on open-air pipes to protect them from freezing.
- **Agriculture, fishery and husbandry huts:** For mushroom huts, fishing ponds, nursery gardens, green houses, and stock keeping sheds, this product can help to insulate heat, keep warmth and control luminosity.
- **Athletic appliances:** Floating beacons for fishing, life buoys, swimming buoys, diving kits, surfboard, and swimmerets etc.
- **Indoor audio:** Recording studios, music studios, testing studios, auditoriums, and karaoke places.
- **Boats and vehicles:** Heat-insulation for various buses, minibuses, trucks, taxis and boats, cold insulation of cooling cabins, and heat-insulation of various engines.

Fire proof Certificate

Attachment
To Certificate No. 037060BPAE
Date: February 21, 2011

Page 1 of 1

Head Office
Jl. Asean Tol Cikarang No. 1, Cikarang Barat, 26138, Indonesia
Phone: +62 (21) 88272400
Fax: +62 (21) 88272401
Email: pm@sgs.com

REPORT OF TESTING

No.	Code of Sample	Dimension Length x Width x Thickness	Burning Time (min)	Flame Height (mm)	Smoke Density
1	32-45-041	90.05 x 28.75 x 22.00	5.1	32	4.33
2	32-45-042	90.05 x 28.69 x 22.00	5.3	34	4.33
3	32-45-043	90.05 x 28.73 x 22.00	5.2	33	4.42

Remark:

- Specimen ceased to burn before reaching the 25 mm gauge mark
- Specimen stopped burning once the flame was removed
- Specimen was confirmed to hard to burn product

Note:

- Class CC1: Materials that have a burning extent of 1 inch (25.4mm) or less when tested at a normal thickness of 0.083 inch (2.1mm), or at the thickness stated for use, in accordance with ASTM D 569
- Class CC2: Materials that have a burning rate of 2.5 inches per minute (64 mm/min) or less when tested at a normal thickness of 0.083 inch (2.1mm), or at the thickness stated for use, in accordance with ASTM D 569
- CSC: Cannot be Classified. This description is for any test results that do not meet CC1 or CC2 criteria

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Certificate No. 037060BPAE
Date: February 21, 2011

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REPORT OF TESTING

CLIENT ADDRESS: ADI TENNEN KARYA BAKTI, PT
Jl. Asean Tol Cikarang No. 1214
Jakarta Pusat 10140

NAME OF SAMPLE: Soft wall insulation

TYPE OF MATERIAL MODEL: Polyethylene Resorol Foam (PFF)

QUANTITY: Length of Sample : 28 cm

TEST REQUIRED: Fire Proof Test

STANDARD TEST METHOD: ASTM D-635

MANUFACTURER: ADI TENNEN KARYA BAKTI, PT

RECEIVED ON: February 11, 2011

TESTED ON: February 16-17, 2011

RESULT: See attached sheet

The Attachment available in an integral part of this certificate.

This Certificate is valid under our General Terms and Conditions, copy of which is available upon request at the following e-mail address:
sgs@sgs.com

SGS General Services
Fire Laboratory

CRT 32 0023 11 40

0770550

Achievement

Lots of famous companies have applied our products to their projects, further make sure they have splendid properties.

Economic Insulation Thickness Formula

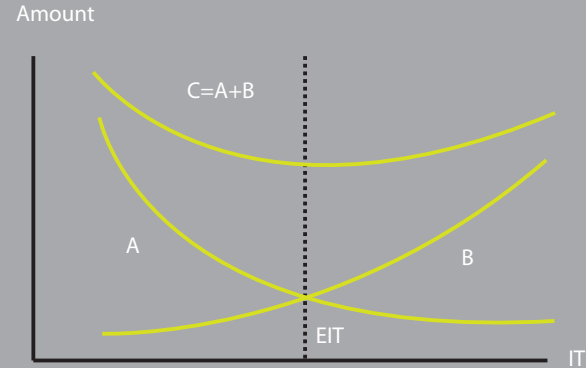
$$1. \text{ Cylinder } \frac{d_1}{2} \ln \frac{d_1}{d_0} + \frac{\lambda}{\alpha} = 10^{-3} \sqrt[3]{\frac{a}{b}} \sqrt{\frac{b \cdot h \cdot \lambda (\theta_0 - \theta_r)}{a N}}$$

$$2. \text{ Plane } x + \frac{\lambda}{\alpha} = 10^{-3} \sqrt[3]{\frac{a}{b}} \sqrt{\frac{b \cdot h \cdot \lambda (\theta_0 - \theta_r)}{a N}} \quad N = \frac{n(1+n)^m}{(1+n)^m - 1}$$

Thermal Discharge Quantity Formula

$$1. \text{ Cylinder } Q = \frac{2 \pi (\theta_0 - \theta_r)}{\frac{2}{d_1 \alpha} + \frac{1}{\lambda} \ln \frac{d_1}{d_0}}$$

$$2. \text{ Plane } Q = \frac{(\theta_0 - \theta_r)}{\frac{1}{\alpha} + \frac{x}{\lambda}}$$



EIT Estimation Graph
 A: Heat Loss Charge B: IM Charge C: Total Cost

Remark

D1 = Outer Dia. Of Insulation Pipe (m)
 D0 = Inner Dia. Of Insulation Pipe (m)
 λ = Thermal Conductive Rate of Insulation (kcal/m.h.°C) (w/m . k)
 α = Surface Thermal Conductive Rate (10kcal/m2 . H . °C) (11.63w/m2 . k)

b = Thermal Quantity Price
 a = Installing Price
 h = Annual used time (h)
 θ_0 = Inner Temp (°C)
 θ_r = Room Temp (°C)
 n = Annual Interest Rate
 m = Lifetime (year)

x = Insulation Thickness (m)
 Q = Thermal Discharge Qty
 Kcal/m.h (w/m) = Cylinder
 Kcal/m2.h (w/m2) = plane
 ln = Logarithm of Nature
 N = Recycle time



Product Overview

- **Good Heat Preservation**
 PFF can effectively prevent the heat transfer to reach excellent thermal insulation effects
- **Excellent Fireproof**
 Class B1 of PFF completely reach ASTM D635 fireproof standard - the oxygen index reach 32, hard to burnt
- **Long Lifetime**
 PFF's splendid aging resistance ensure its lifetime over 15 years
- **Low Temperature Resistance**
 PFF's application conditions temperature can reach -80°C for its stable physic performance
- **Environmental Friendly**
 PFF has no toxic elements and can be recycled and reused
- **Sound Insulation & Damp Proof**
 PFF can absorb and insulate sounds, preventing the hydrosphere filter and air circulation

Flame resistance flexibility and easy installation because has included jacketing makes Softwell a very economical insulation material for high standard buildings.

