문서관리번호

The Cutting Edge Polymer Material is ...

Non-Combustible
Quasi-Noncombustible
Acoustic Absorbent
Insulation

Polypreg™

COMPARISON OF CHARACTERISTICS OF ORGANIC INSULATION MATERIALS

[Polypreg Foam *vs* Polyimide Foam *vs* Melamine Foam]
(KOREA) (USA) (GERMANY)

Korea Technology Chemistry, INC.

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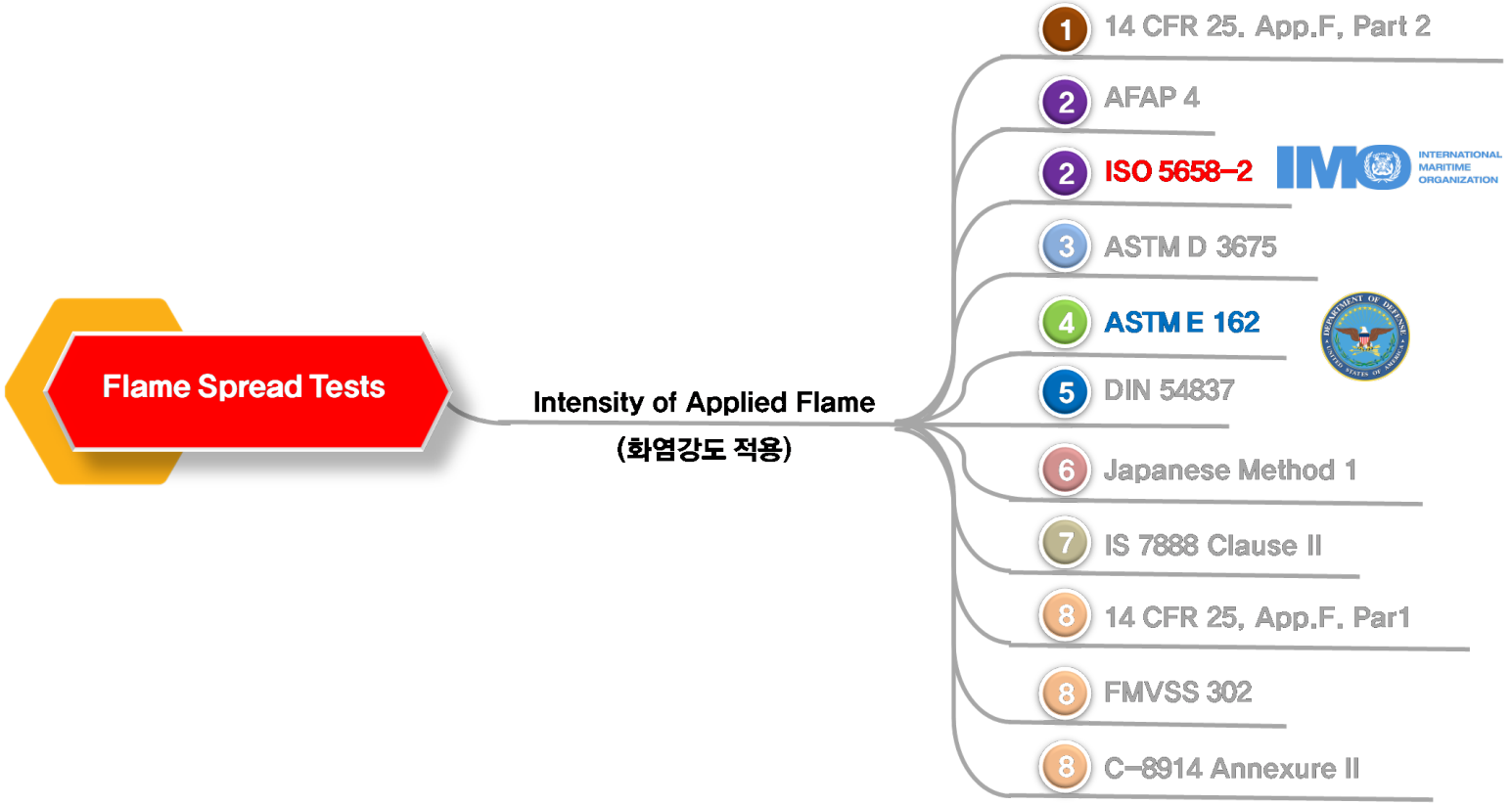
Flammability Characteristics Comparison

Flame spread Test Method

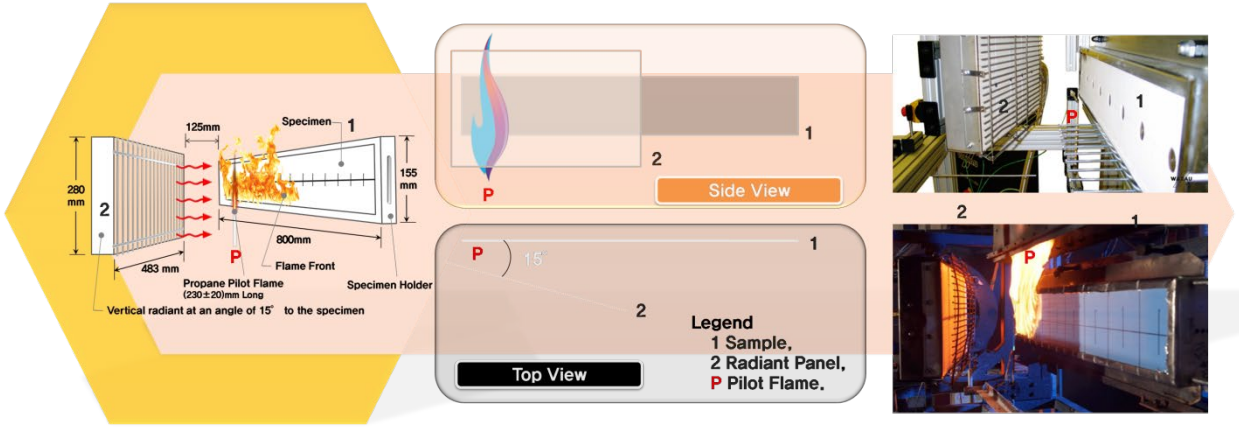
- **Qualitative comparison of flame intensity in all flame spread tests reviewed**



Flammability Characteristics Comparison

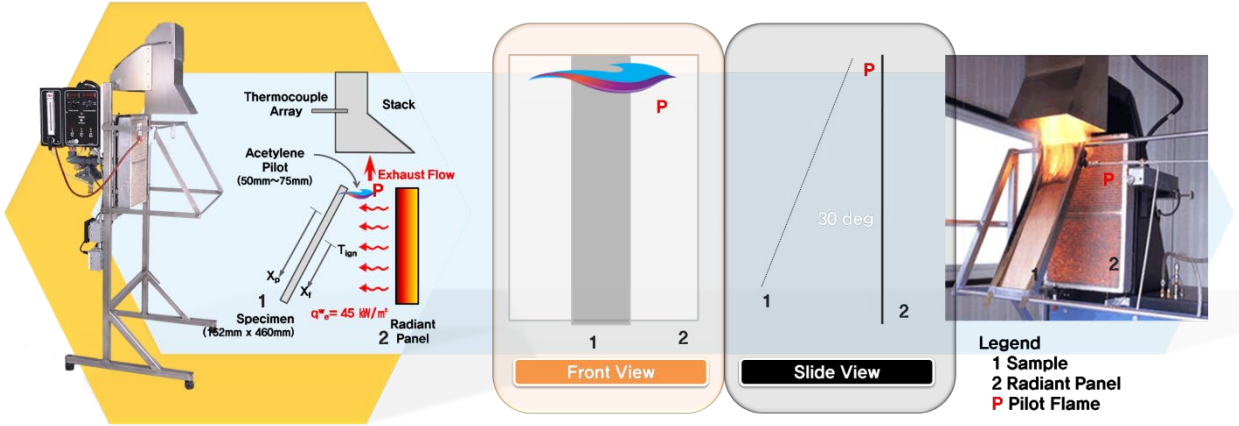
Flame spread Test Method

Geometry of radiant panel flame and sample in ISO 5658–2 and AFAP 4



IMO

Geometry of ASTM E162 and ASTM D3675 test configuration



DEPARTMENT OF DEFENSE · UNITED STATES OF AMERICA

Flammability Characteristics Comparison

Flame spread Test Result comparison

Comparison of Fire Test Methods

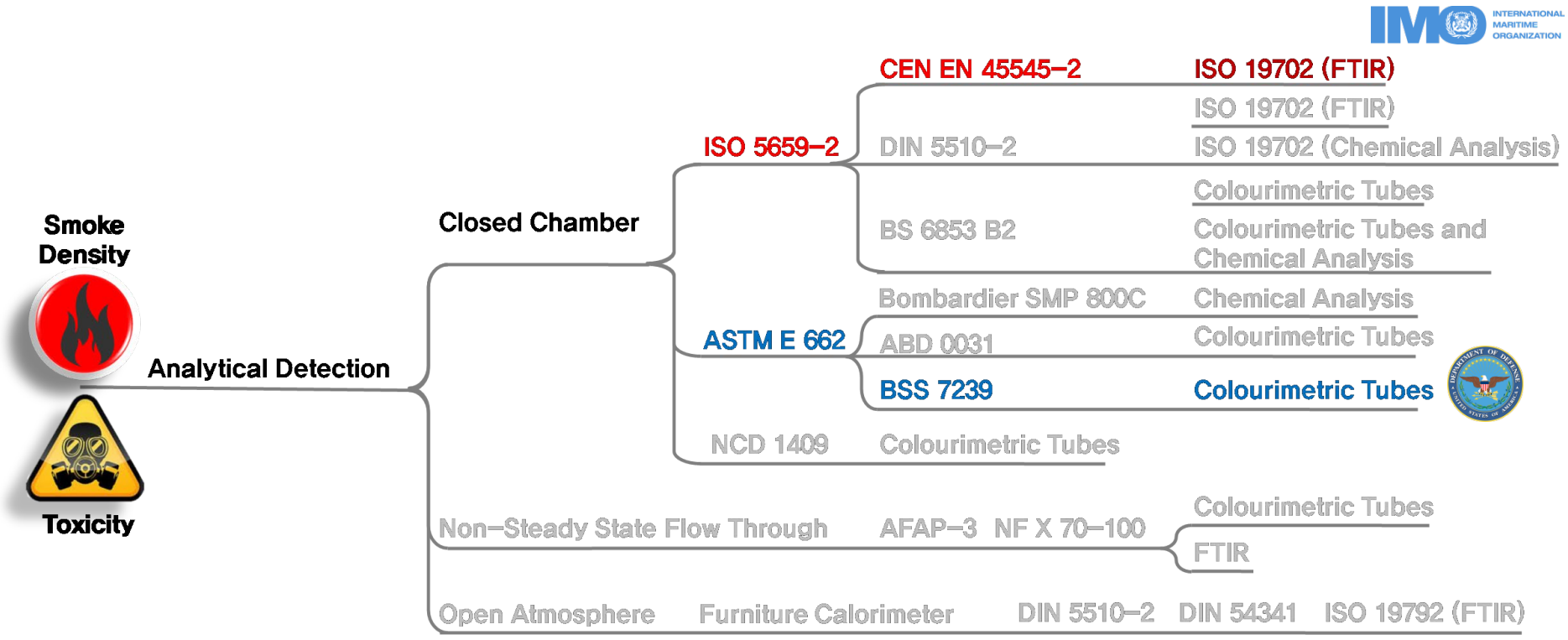
Fire Spread Characteristics (화염 전파 특성)	IMO FTP Code Annex 1, Part 5	IMO FTP Code Annex 1, Part 10 U.S Mil spec DOD-I-24688	IMO FTP Code Annex 1, Part 1
Test Method	ISO 5658-2	ASTM E 162	ISO 1182
Sample Size(mm)	800 x 155	152 x 457	
Radiant Panel Size(mm)	480 x 280	300 x 460	
Radiant Panel Energy(kW/㎡)	1.5 ~ 50.5	5 ~ 25	
Test duration(min)	30	15	
Pilot location	Bottom to top	Top	
Flame length(mm)	230	50 ~ 75	
Pilot flame intensity (W)	557	410	
Pilot flame energy input(J)	1,002,000	369,000	

Fire Test Results

Fire Spread Characteristics (화염 전파 특성)	IMO FTP Code 337(88)	Polypreg Foam (Korea)	Polyimide Foam (USA)	Melamine Foam (Germany)	Glass Wool (Korea)
CFE Critical flux at extinguishment (kW/m2)	≥ 20.0	49.5	≤ 5 (Flame spread Index)	0.96 (Flame spread Index)	No data
Qsb Heat for sustained burning (MJ/m2)	≥ 1.5	Undefined			No data
Qt Total heat release (MJ)	≤ 0.7	0.0			No data
Qp Peak heat release rate (kW)	≤ 4.0	0.1			No data
Burning droplets	Not produced	0	No item	No item	No data
ISO 4589-2 (Oxygen Index)		43.8	No Data (〉28)	No data (〉30)	No data

Smoke Density & Toxicity Characteristics Comparison

Smoke Density & Toxicity Test Method

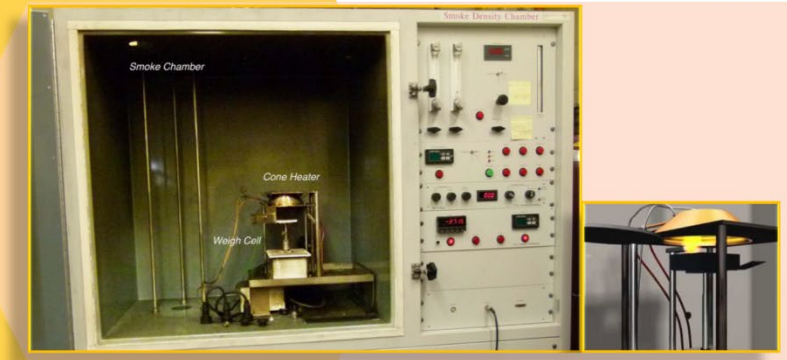


Smoke Density & Toxicity Characteristics Comparison

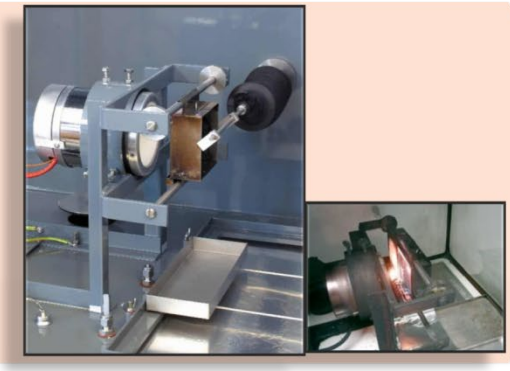
Smoke Density & Toxicity Test Method

ISO 5659-2 *vs* ASTM E 662

ISO 5659-2



ASTM E 662



Advantages and disadvantages of selected detection techniques

	ISO 5659-2 + ISO 19702 (FTIR) FTIR Analysis	ASTM E 662 + BSS 7239 Colourimetric Tubes
Pros	Accurate and precise One instrument can determine many species Results available relatively quickly Spectra can be stored for later reference	Inexpensive Easy to use Results available quickly
Cons	Moderately expensive Requires skilled operator for set up and operation Requires on-going maintenance	Can have interferences Are not highly accurate

Smoke Density Characteristics Comparison

Smoke Density Test Result comparison

Comparison of Smoke density Test Methods

Smoke Density Characteristics (연기밀도특성)		IMO FTP Code Annex 1, Part 2	IMO FTP Code Annex 1, Part 10 U.S Mil spec DOD-I-24688	IMO FTP Code Annex 1, Part 1
Test Method		ISO 5659-2	ASTM E 662	ISO 1182
Radiator	Power	2600W	-	
	Heat Flux	10 kW/㎡ ~ 50kW/㎡	25 kW/㎡	
	Measure position	25mm under specimen	38mm front of specimen	
Testing Configuration		Horizontal	Vertical	
Test Time		20	20	
Irradiation		ㅇ 25 kW/㎡ with pilot flame & ㅇ 25 kW/㎡ without pilot flame & ㅇ 50 kW/㎡ without pilot flame	ㅇ 25 kW/㎡ with pilot flame & ㅇ 25 kW/㎡ without pilot flame	
Measured parameters		D_s max. (For the 3 types of irradiation)	D_s (4).	
Specimen Size (mm)		(Less than 25t) x 75 x 75	(Less than 25t) x 75 x 75	

Fire Test Results

Smoke Density Characteristics (연기밀도특성)	IMO FTP Code 337(88)	Polypreg Foam (Korea)	Polyimide Foam (USA)	Melamine Foam (Germany)	Glass Wool (Korea)
25 kW/㎡ with pilot flame	≤ 200	2.0	5	27	No data
25 kW/㎡ without pilot flame	≤ 200	2.2	3	53	No data
50 kW/㎡ without pilot flame	≤ 200	16.8	No item	No item	No data

Toxicity Characteristics Comparison

Toxicity Test Result comparison

Comparison of Toxic Gas Test Methods

Toxic Gas Characteristics (독성 가스 특성)		IMO FTP Code Annex 1, Part 2	IMO FTP Code Annex 1, Part 10 U.S Mil spec DOD-I-24688
Test Method		ISO 5659-2 + ISO 19702(FTIR)	ASTM E 662 + BSS 7239
Radiator	Power	2600 W	-
	Heat Flux	10 kW/㎡ ~ 50kW/㎡	25 kW/㎡
	Measure position	25mm under specimen	38mm front of specimen
Testing Configuration		Horizontal	Vertical
Test Time		20	20
Irradiation		ㅇ 25 kW/㎡ with pilot flame & ㅇ 25 kW/㎡ without pilot flame & ㅇ 50 kW/㎡ without pilot flame	ㅇ 25 kW/㎡ with pilot flame & ㅇ 25 kW/㎡ without pilot flame
Measured parameters		Maximum individual concentration for 7 gases	Maximum individual concentration for 6 gases at 1.5 and 4min
Specimen Size (mm)		(Less than 25t) x 75 x 75	(Less than 25t) x 75 x 75

Fire Test Results

Toxic Gas Characteristics (독성 가스 특성) Test Method		IMO FTP Code 337(88)	Polypreg Foam (Korea)			Polyimide Foam (USA) BSS 7239	Melamine Foam (Germany) BSS 7239
		ISO 19702(FTIR)	25/F	25/N-F	50/N-F		
CO		≤ 1450 ppm	21	28	77	180 ppm	42.5
HBr		≤ 600 ppm	0	0	0	No item	No item
HCl		≤ 600 ppm	0	0	0	〈 10 ppm	25
HCN (시안화수소)		≤ 140 ppm	0	0	0	〈 1 ppm	14
HF		≤ 600 ppm	0	0	0	〈 1 ppm	0.5
NO_x	NO	≤ 350 ppm	0	0	0	〈 1 ppm	5.0
	NO_2	≤ 350 ppm	0	0	0		0
SO_2		≤ 120 ppm	0	0	0	〈 1 ppm	15

Comprehensive of Fire Test Results

Flame Spread Tests / Smoke Density & Toxicity Tests

IMO FTP Code Annex 1 Fire test procedures		Test Method	Materials	Re-Mark (Data)
Part 1	Non-combustibility test	ISO 1182	Glass Wool	No Data
Part 2	Smoke and toxicity test	ISO 5659-2 (Smoke) ISO 19702(FTIR) (GAS)	Polypreg Foam (KOR)	IMO Data
Part 3	Test for "A", "B" and "F" class divisions	ISO 834		
Part 4	Test for fire door control systems	ISO 834		
Part 5	Test for surface flammability (Test for surface materials and primary deck coverings)	ISO 5658-2	Polypreg Foam (KOR)	IMO Data
Part 6	(blank)*			
Part 7	Test for vertically supported textiles and films	Ignition burner ((DIN) 50 051 type KBN)		
Part 8	Test for upholstered furniture	Smoldering cigarette & Smoldering match equivalent		
Part 9	Test for bedding components			
Part 10	Test for fire-restricting materials for high-speed craft	Annex 1. : ISO 9705 Annex 2. : ISO 5660	Polyimide Foam (USA) Melamine Foam (GER)	DoD Data
Part 11	Test for fire-resisting divisions of high-speed craft	ISO 834		

Comprehensive of Fire Test Results

Comprehensive Comparison

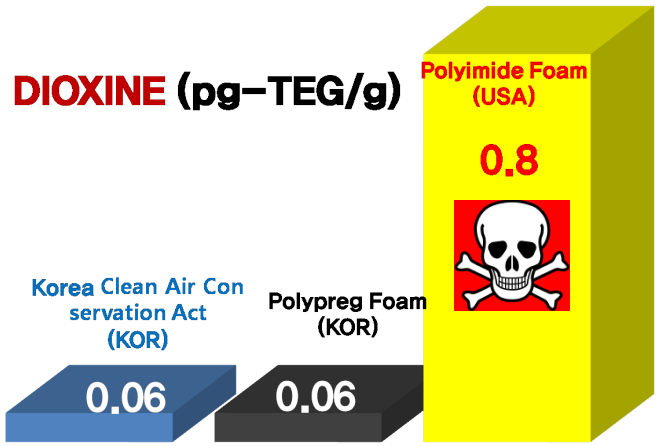
Comprehensive of Fire Test Results.

Fire Characteristics (화재 특성)		IMO FTP Code 337(88)	Polypreg Foam (Korea)			Polyimide Foam (USA)		Melamine Foam (Germany)		Glass Wool (Korea)
Fire Spread Characteristics	Test Method	ISO 5658-2	ISO 5658-2			ASTM E 162		ASTM E 162		ISO 1182
	CFE (kW/m2)	≥ 20.0	49.5			≤ 5 (Flame spread Index)		0.96 (Flame spread Index)		No data
	Qsb (MJ/m2)	≥ 1.5	Undefined							No data
	Qt (MJ)	≤ 0.7	0.0							No data
	Qp (kW)	≤ 4.0	0.1							No data
	Burning droplets	Not produced	0			No item		No item		No data
Smoke Density Characteristics	Test Method	ISO 5659-2	25/F	25/N-F	50/N-F	ASTM E 662		ASTM E 662		ISO 1182
	Dm	≤ 200	2.0	2.2	16.8	5	3	53	27	No data
Toxic Gas Characteristics	Test Method	ISO 19702(FTIR)	25/F	25/N-F	50/N-F	BSS 7239		BSS 7239		ISO 1182
	CO	≤ 1450 ppm	21	28	77	180 ppm		42.5		No data
	HBr	≤ 600 ppm	0	0	0	No item		No item		No data
	HCl	≤ 600 ppm	0	0	0	〈 10 ppm		25		No data
	HCN (시안화수소)	≤ 140 ppm	0	0	0	〈 1 ppm		14		No data
	HF	≤ 600 ppm	0	0	0	〈 1 ppm		0.5		No data
	NO_x NO	≤ 350 ppm	0	0	0	〈 1 ppm		5		No data
	NO_x NO_2	≤ 350 ppm	0	0	0			0.0		No data
	SO_2	≤ 120 ppm	0	0	0	〈 1 ppm		15		No data
Certification			MED IMO FTPC Annex 1. Part 5 & Part 2			IMO FTPC Annex 1. Part 10		IMO FTPC Annex 1. Part 10		IMO FTPC Annex 1. Part 1.

Persistent Organic Pollutant Test Results

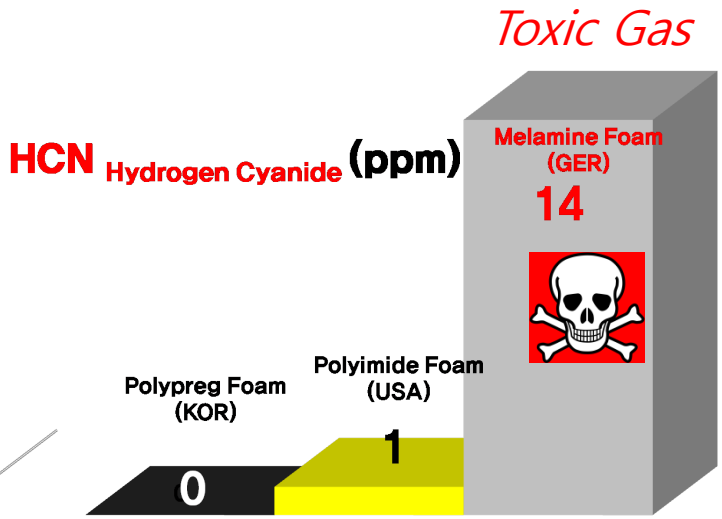
ES 10308.1:

Dioxin and furan test method in environmental air sample - HRGC / HRMS



ISO 5659-2 / ISO 19702 (FTIR) :

Polypreg Foam(KOR)



ASTM E 662 / BSS 7239 :

Polyimide Foam(USA), Melamine Foam(GER)

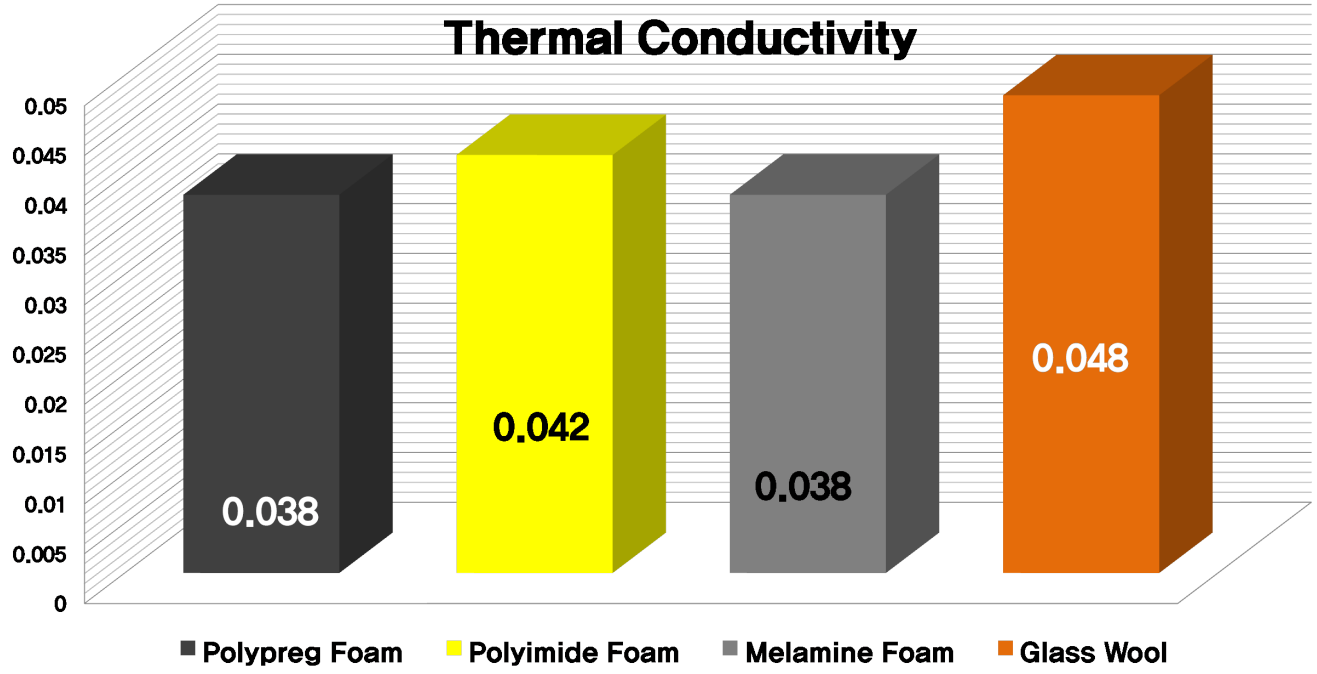
2 Thermal characteristics

Thermal Characteristics Comparison

Thermal

Comparison of Thermal Conductivity Test Methods

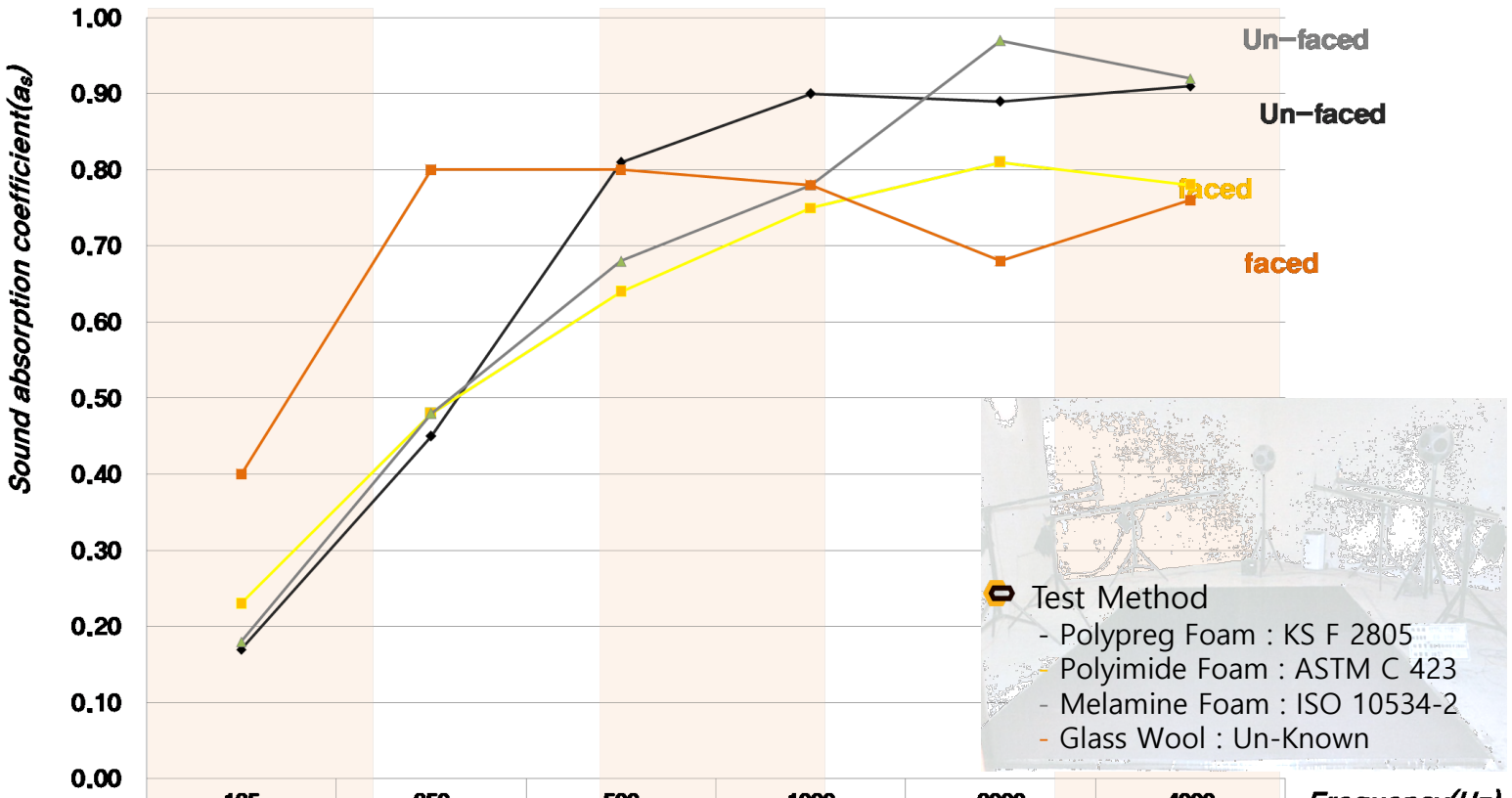
Thermal Characteristics (온도 특성)	Criteria unit	Polypreg Foam (Korea)	Polyimide Foam (USA)	Melamine Foam (Germany)	Glass Wool (Korea)
Test Method	-	KS L 9016	ASTM C 518	DIN 12657	ASTM C 518
Thermal Conductivity	W/m · k	0.038 (25℃)	0.042 (24℃)	0.038 (10℃)	0.048 (20℃)
Max. Use temperature	℃	≤ 400	≤ 250	≤ 200	≤ 350



3 Acoustic characteristics

ACOUSTIC CHARACTERISTICS

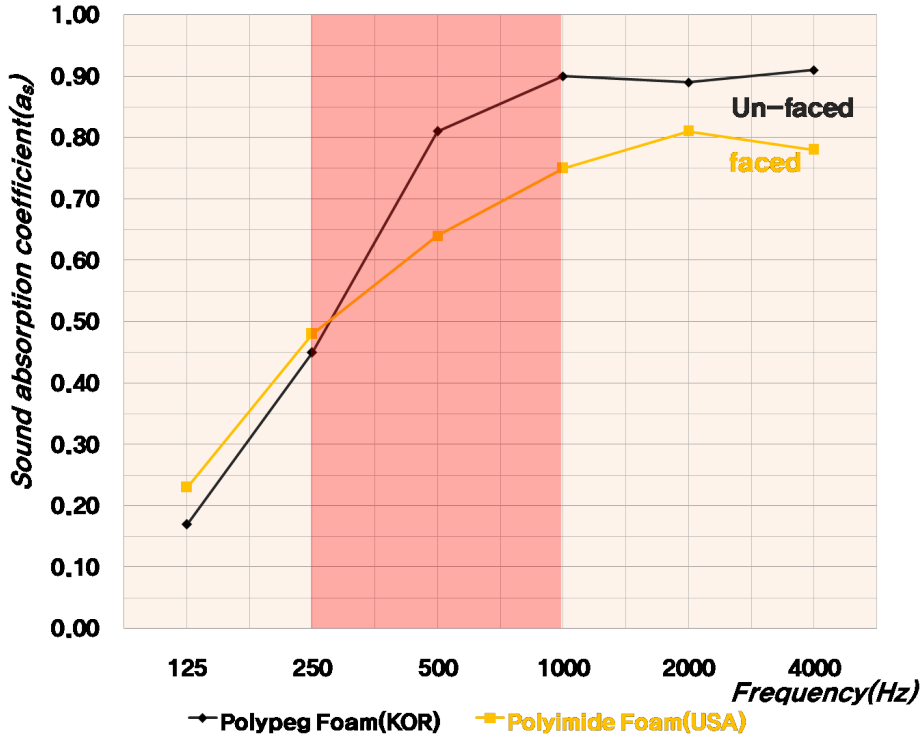
Method for measurement of sound absorption coefficients in a reverberation room

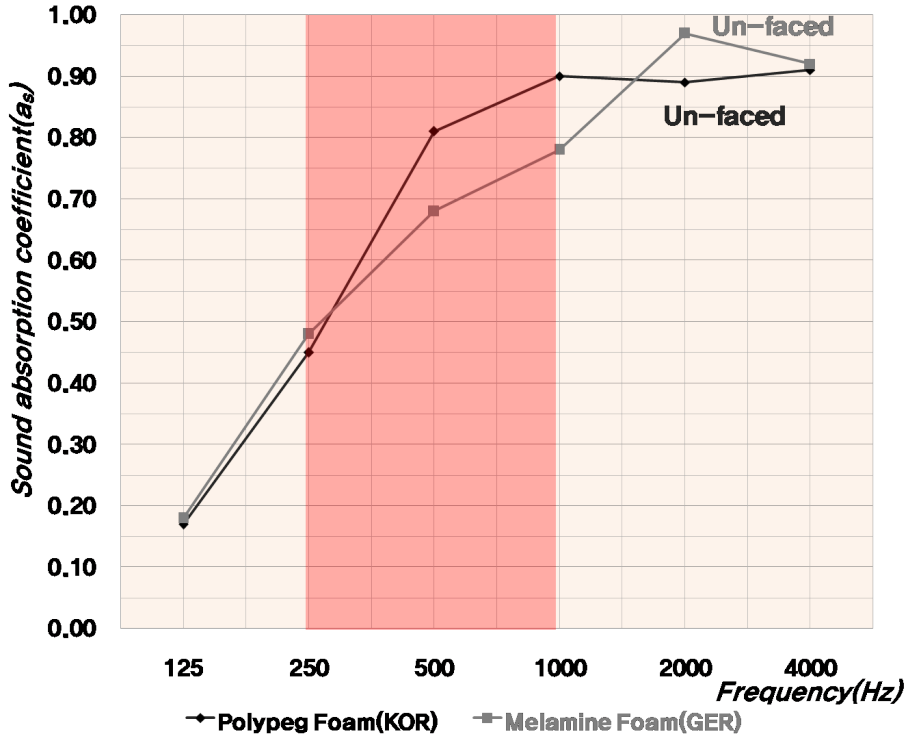


	125	250	500	1000	2000	4000	Frequency(Hz)
Polypeg Foam(KOR)	0.17	0.45	0.81	0.90	0.89	0.91	
Polyimide Foam(USA)	0.23	0.48	0.64	0.75	0.81	0.78	
Melamine Foam(GER)	0.18	0.48	0.68	0.78	0.97	0.92	
Glass Wool	0.40	0.80	0.80	0.78	0.68	0.76	

Sound absorption characteristics comparison

Foam(50mm) \ Frequency(Hz)	125	250	500	1000	2000	4000	NRC
Polypreg Foam (KOR)	0.17	0.45	0.81	0.90	0.89	0.91	0.76
Polyimide Foam (USA)	0.23	0.48	0.64	0.75	0.81	0.78	0.67
Melamine Foam (GER)	0.18	0.48	0.68	0.78	0.97	0.92	0.73

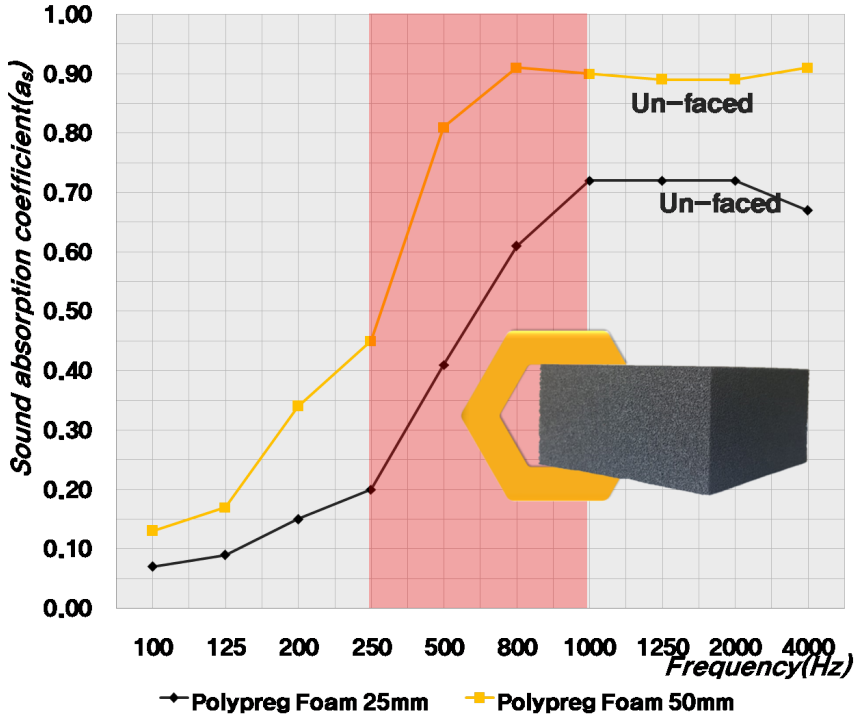


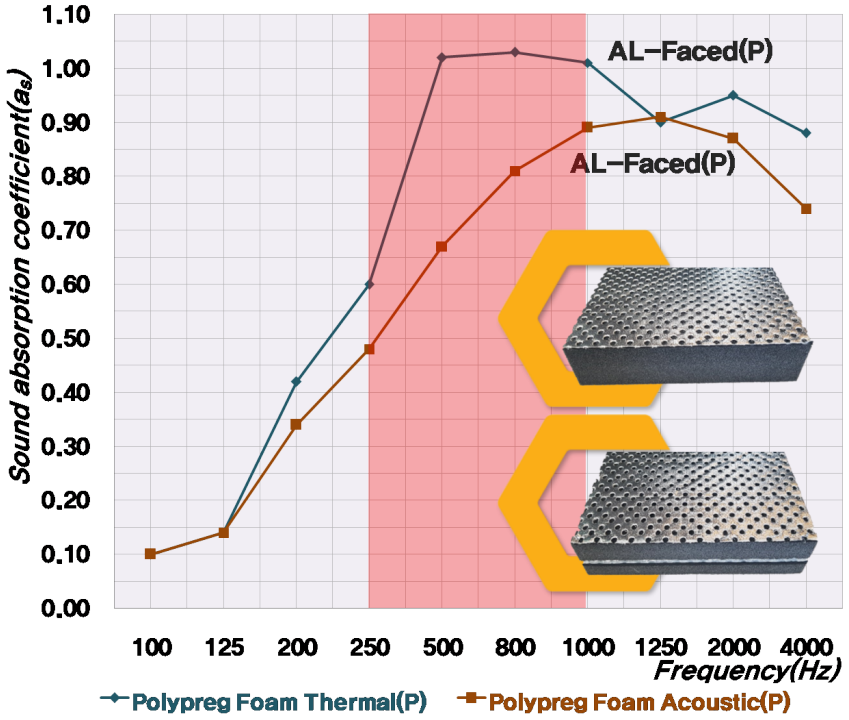


Sound absorption characteristics of the Polypreg™ Foam Family

KS F 2805 : 2014 Method for measurement of sound absorption coefficients in a reverberation room

Frequency(Hz) / Thickness /Products(50mm)	100	125	200	250	500	800	1000	1250	2000	4000	NRC
Polypreg Foam (25mm)	0.07	0.09	0.15	0.20	0.41	0.61	0.72	0.72	0.72	0.67	0.52
Polypreg Foam (50mm)	0.13	0.17	0.34	0.45	0.81	0.91	0.90	0.89	0.89	0.91	0.76
Polypreg Foam Thermal(P)	0.10	0.14	0.42	0.60	1.02	1.03	1.01	0.90	0.95	0.88	0.89
Polypreg Foam Acoustic(P)	0.10	0.14	0.34	0.48	0.67	0.81	0.89	0.91	0.87	0.74	0.73



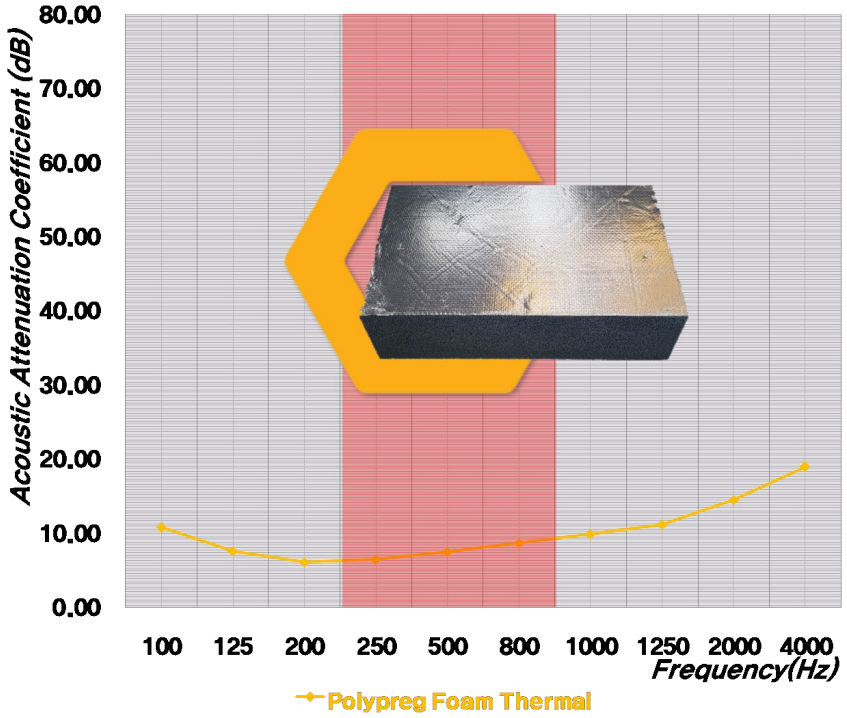


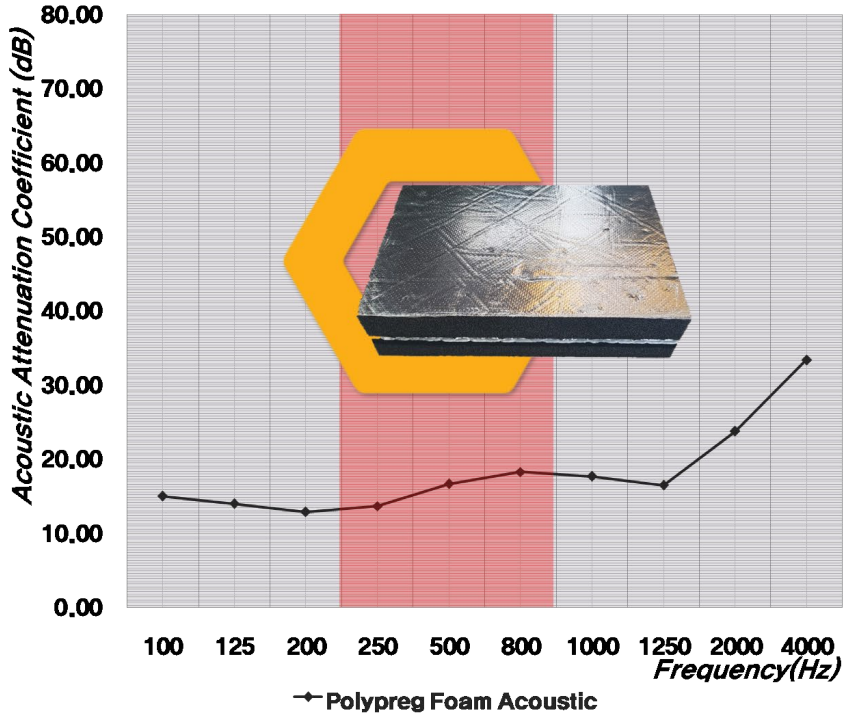
Sound insulation characteristics of the Polypreg™ Foam Family

Acoustic transmission loss

KS F 2808 : 2011 laboratory measurements of airborne sound insulation of building elements

Frequency(Hz) / Products(50mm)	100	125	200	250	500	800	1000	1250	2000	4000	R' w
Polypreg Foam Thermal	10.8	7.6	6.1	6.5	7.5	8.7	9.9	11.2	14.5	19.0	11
Polypreg Foam Acoustic	15.0	14.0	12.9	13.7	16.7	18.3	17.7	16.5	23.8	33.4	21

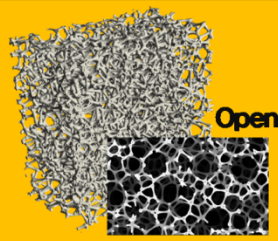
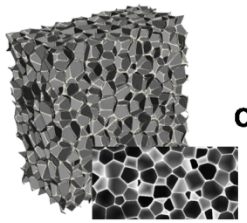




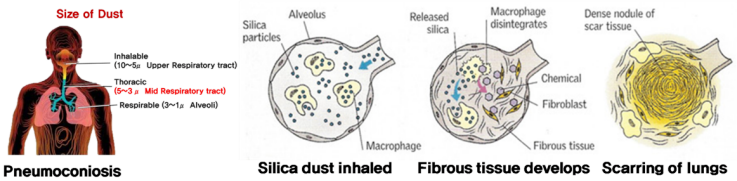
4 Pros and Cons of Materials

Pros and Cons of Materials

General characteristics comparison.

DISTRIBUTION	Polypreg™ Foam (Korea)	Polyimide Foam (USA)	Melamine Foam (GR)
Cell Structure	 Open-Cell Foam	 Closed-Cell Foam	
Property	Flexible Foam	Semi-Rigid Foam	
Air Permeability (m^2/min)	0.162	No Data	
Thermal conductivity (W/m · k)	≤ 0.038 (★★★★★)	≤ 0.042 (★★★)	≤ 0.038 (★★★★★)
Absorption rate (g/cm^2)	≤ 1.0 g/㎠	High absorption rate (Not discharged)	
Tensile strength (kPa)	≥ 100 kPa (★★★★★)	≥ 60 kPa (★★)	80 kPa (★★★)
Tearing strength (N/m)	≥ 300 N/m (★★★★★)	No data	
Tensile elongation (%)	≥ 80 %	No data	(Easily torn)
Rebound resilience *%)	≥ 15 % (Excellent resilience)	No data	(Weak resiliency)
Usage temperature(℃)	≤ 400℃ (★★★★★)	≤ 250 ℃ (★★★★)	≤ 200 ℃ (★★★)
Oxygen index (L.O.I)	43.8 (★★★★★)	No Data (〉28) (★★)	No data (〉30) (★★★)
Hot shrinkage temperature(℃)	None	No data	

General characteristics comparison.

DISTRIBUTION	Polypreg™ Foam (Korea)	Polyimide Foam (USA)	Melamine Foam (GR)
Mould inhabitation	None	None	
Human hazard (Dust influence)	▫ Environmentally friendly. ◦ There is no dust on handling. ◦ Very safety ◦ RoHS-6 (Restriction of Hazardous Substances) Not detected. (★★★★★)	◦ ENVIRONMENTAL AND HEALTH THREATs. × Large amount of fine dust during handling (fast oxidation and aging phenomenon) (★★★) × 	
Fire Restrict Performance	▫ SAFETY FROM FIRE. (★★★★★) ◦ There is no flame spread of flame when contacting the fire. ◦ Low smoke density and toxic gases during combustion.	◦ INSTABILITY FROM FIRE. (★★) × In case of contact with fire, it is deformed and the protective material is exposed to fire. × Somewhat higher smoke density and toxic gases during combustion. × Hydrogen cyanide(HCN) gas on combustion (Melamine foam). (★)	
Sound absorption performance	◦ Excellent sound absorption performance. ◦ Long lasting functionality due to high durability and weather resistance. (★★★★★)	◦ Excellent initial sound absorption performance. ◦ Problems with maintaining durability of functions due to aging and weak weatherability. (★★★)	
Recycling and other	◦ Recyclable ◦ Excellent workability due to its flexibility, elongation and resilience. ◦ Reduced maintenance and environmental management costs due to high durability. ◦ Possible to transfer technology overseas (★★★★★)	◦ Certain wastes (Non-recyclable). ◦ Due to the semi-rigid foam (weak resilience, elongation, repulsive elasticity), poor workability due to easy breakage and fine dust. ◦ Higher maintenance and environmental maintenance costs increase. ◦ World proprietary technology (No technology transfer). (★★★)	
Price competitiveness	◦ Very High (★★★★★)	× Week (★)	× Middle (★★★)

Pros and Cons of Materials

General characteristics comparison.

DISTRIBUTION	Polypreg™ Foam (Korea)	Polyimide Foam (USA)	Melamine Foam (GR)
Pros	◊ High heat resistance and insulation performance. ◊ Safe use temperature is high (≤ 400 ℃). ◊ Excellent sound absorption. ◊ Easy handling and Workability (excellent tearing, tensile, elongation, recovery). ◊ Superior durability & weatherbility : Reduced environmental and maintenance costs. ◊ Excellent price competitiveness as an import substitute. ◊ Create high value-added products through recycling and regeneration.	◊ High heat resistance ◊ Safe Use temperature is high (≤ 250 ℃) ◊ Excellent chemical resistance ◊ World exclusive technology and exclusive supply.	
Cons	◊ Low recognition of domestic products. ◊ It is somewhat denser than imported organic insulation.	◊ Fast oxidation (aging), low durability: Excellent initial performance, but poor durability to maintain long-term performance (Cause of increased maintenance and environmental management costs). ◊ Semi-rigid foam (vulnerable tear strength, tensile strength, elongation, resilience, etc.) : Poor workability due to foam fine dust generation (Harmful to workers and occupants). ◊ Human hazards present to workers and crew(Fine Dust). ◊ Personal protective equipment is required at work. ◊ Closed cells, weight gain due to absorption : poor insulation, poorsound absorption. ◊ As the world's exclusive item (no technology transfer), the price is very expensive. ◊ Not recyclable (special waste).	
Usage	◊ Insulation (house, Transport equipment, etc.) ◊ Surface finishes material of firewalls and fireproof materials (insulation, sound absorption) ◊ Ship (cruise / yacht), aircraft, railway sound absorbing material ◊ Heat insulation, soundproof interior material ◊ Pipe insulation ◊ Duct and piping insulation	◊ Insulation (Transport equipment, etc.) ◊ Refrigerated Shield insulation ◊ Insulation of vehicles, factory equipment, sound absorption ◊ Ship (cruise / yacht), aircraft, railway sound absorbing material ◊ Piping purpose	

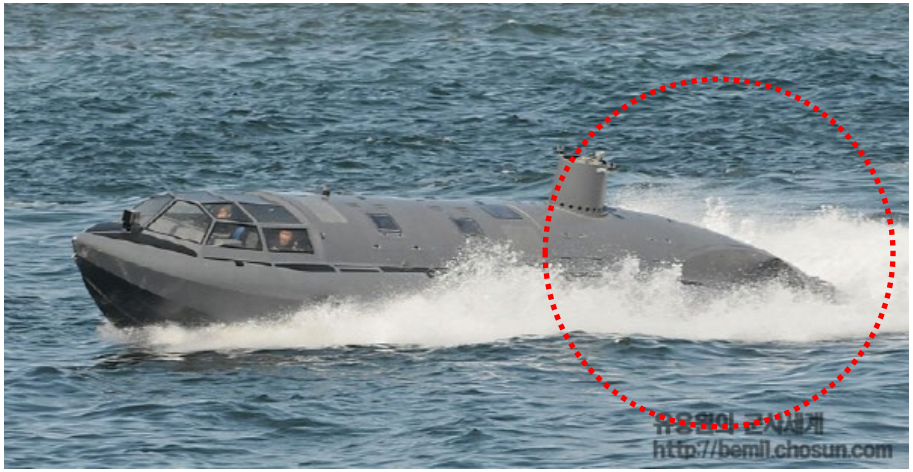
Pros and Cons of Materials

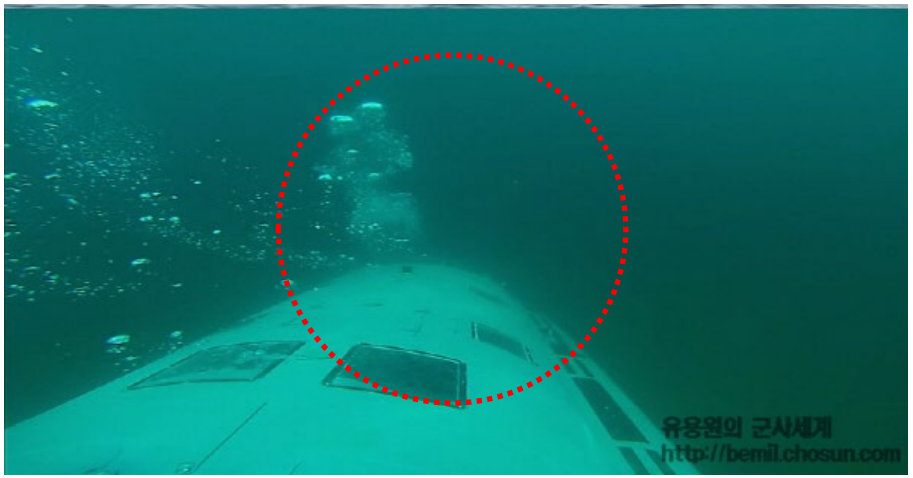
Pros and cons comparison

Characteristics	Polypreg Foam (Korea)	Polyimde Foam (USA)	Melamine Foam (Germany)
Cell Structure	*Open Cell*	Closed Cell	
Cell Diameter	*Large & Small*	Small	
Water Absorption	*Control*	High / Cause of weight increase	
Capillarity	None		
Mechanical strength	Strength (★★★★★)	Weakness (★★)	Weakness (★★)
Flammability	◦ *UL 94 V-0* ◦ *BS 4589-2 (L.O.I) 35 ≤* ◦ *IMO Res. MSC. 307(88) / ISO 5658-2 & ISO 5659-2*	◦ DOD-I-24688 ◦ U.S. FRA and FTA (Docket 90-A) ◦ IMO Res. MSC.40(64)	◦ DIN 4102-1 B1 ◦ UL 94 V-0/HF-1
Sound Absorption	*Very Excellent*	Excellent initial performance.	
Flexibility	Flexible (Soft) (★★★★★)	Semi-Rigid (weak) (★★)	Semi-Rigid (weak) (★)
Oxidation and Aging Phenomenon	None (★)	Very fast (★★★★★)	
Durability	Very high (★★★★★)	Very vulnerable (★)	
Workability	◦ *Excellent Flexibility and Elasticity with Flexible Foam* ◦ *Superior resilience* ◦ *No fine dust* (★★★★★)	◦ Easily broken with Semi-Rigid Foam ◦ Generate a large amount of fine dust during work (indoor environment pollution) ◦ Weight increase due to absorption (★★)	
Heat Resistance (℃)	*≤ 400*	≤ 250	≤ 200
Mould inhabitation	*Do not breed*		
Pros & Cons	◦ *Best sound absorption and insulation* ◦ *Good processability* ◦ *High durability and weather resistance* ◦ *Imported alternative materials* ◦ *High economic feasibility (High durability / Reduction of environment and management cost) Recyclable)* ◦ *Various industrial flame retardance standards easy to pass.*	◦ World's Only Exclusive Items (100% Imported Products) ◦ Non-recyclable ◦ Fast aging with semi-rigid series ◦ Easily broken into semi-Rigid series ◦ Resilient ◦ Large amount of fine dust during work ◦ Expensive price with imported products	
Cost (₩/50mm.㎡)	High price competitiveness (★★★★★)	Highest price (★)	Generally expensive (★★★)

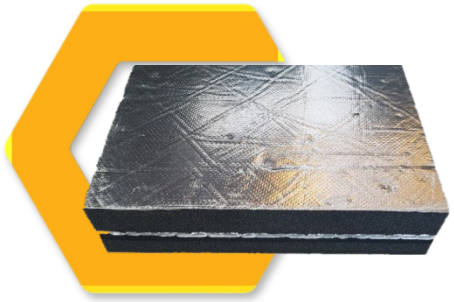
5 Construction Case

Stealth Infiltration Boat.





Polypreg Acoustic Foam



- Isolation of noise and vibration in engine room.
- Reduce IR detection.
  - Meet stealth requirements.

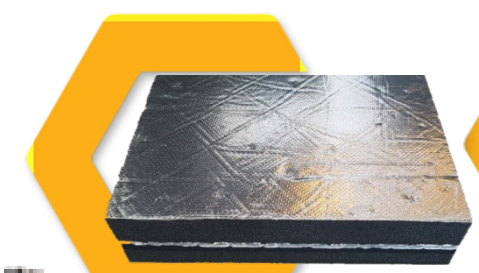
K-9 SELF-PROPELLED ARTILLERY

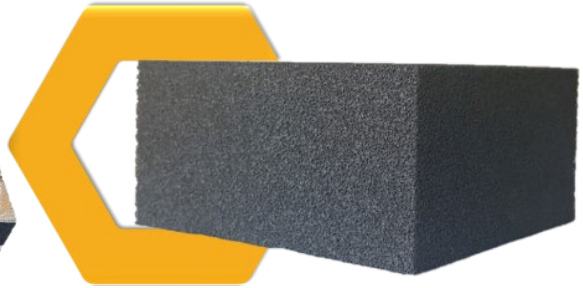
Polypreg Acoustic Foam

- Soundproof material for the generator:
  low frequency noise isolation

Artillery Detection Radar-II

Polypreg Acoustic Foam





- Absorption of generator noise (Soundproofing Materials)

ROKS Dokdo LPH6111 Power-Pack

Polypreg Acoustic Foam

- Applied as sound insulation material for Power-Pack noise reduction to meet IMO noise standard (337(91) / 72dB)

6 Application of Polypreg Products on board.

Application of Polypreg Products on board.

Polypreg Foam

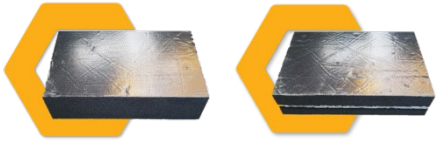
Polypreg Foam

- **Insulation**
  - *Thermal & Sound Absorption Insulation*
    - Closed facing
    - Perforated facing layer
  - *Thermal & Sound Proofing Insulation*
    - Closed facing
    - Perforated facing layer
- **Cushions**
  - Mattress
  - Pillow
  - Sofa
  - Chair
  - Other (Ex. Shock protection etc.)

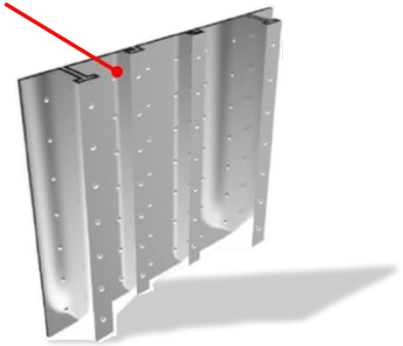
Application of Polypreg Foam Insulation on board.

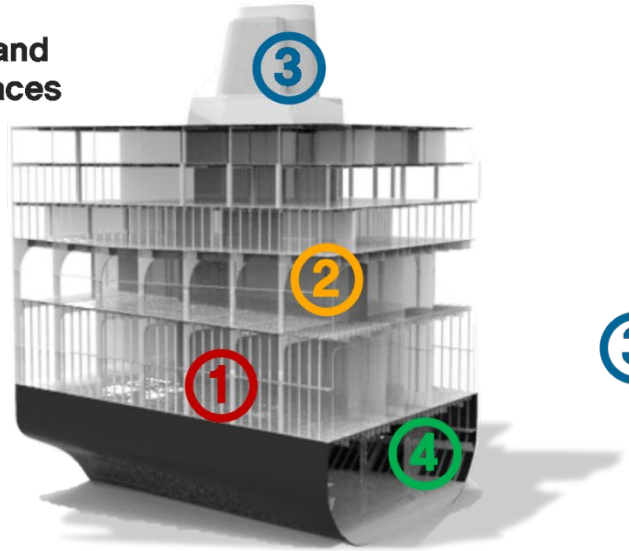
IMO FTP Code Annex1, Part 5 & Part 2

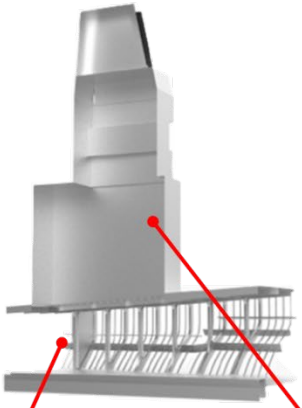
Test for surface Flammability & Smoke and Toxicity Test



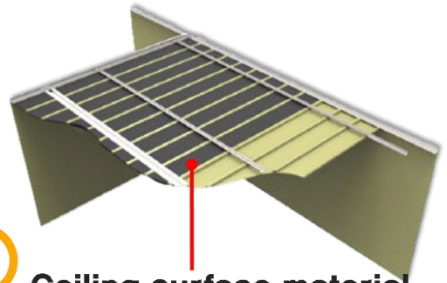
① Surface materials for bulkheads and ceilings and similar exposed surfaces







③ Engine Room & Funnel Sound Acoustic Material



② Ceiling surface material

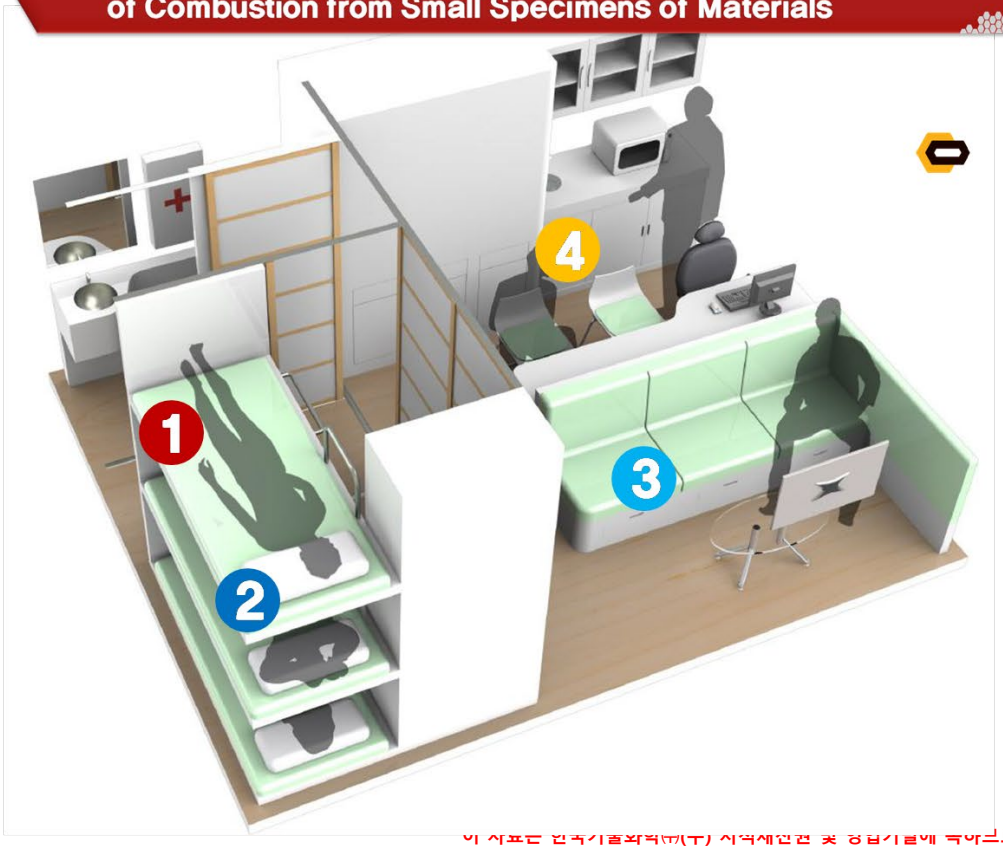
Heat, Air Ventilation, and Cooling Pipe & Duct Finish Materials ④

Application of Polypreg Products on board.

Application on board of Polypreg Cushion Core Foam.

IMO FTP Code Annex1, Part 5 & Part 2
- Test for surface Flammability & Smoke and Toxicity Test

MOD DEF-Stan 02-713
- Test for Determination of the Toxicity Index of the Products of Combustion from Small Specimens of Materials



Urethane Foam for
Mattresses, Cushions

Core foam for cushion use

1. Mattress
2. Pillow
3. Sofa
4. Chair

Other core foam
(Ex. Shock protection etc.)

Application of Polypreg Products on board.

Polypreg Rubber

Polypreg Rubber

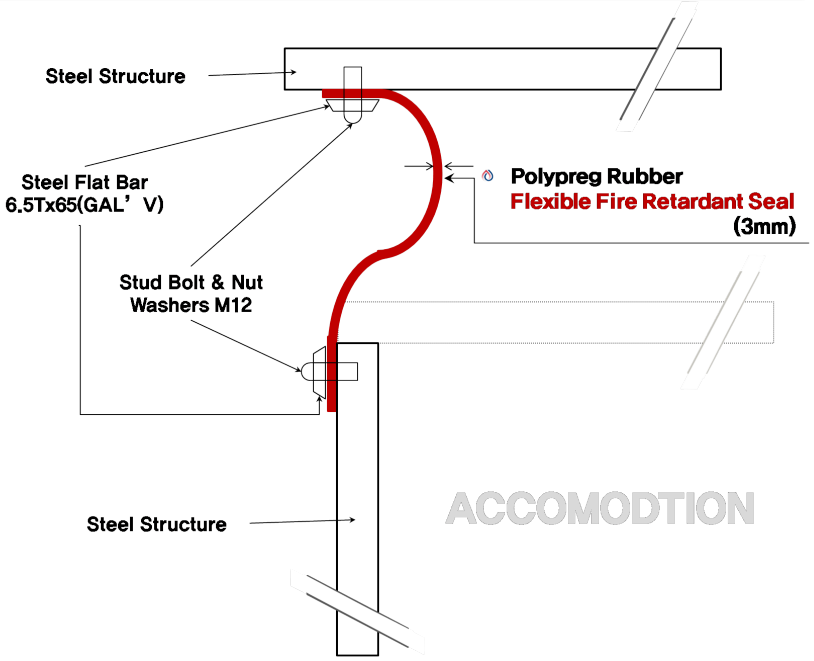
- Vibration
  - 3mm
  - 5mm
- Cladding
  - 1.2mm
  - 2mm

Application on board of Polypreg Rubber.

Polypreg Rubber
Flexible Fire Retardant Seal Rubber
3mm

IMO FTP Code Annex1, Part 5 & Part 2

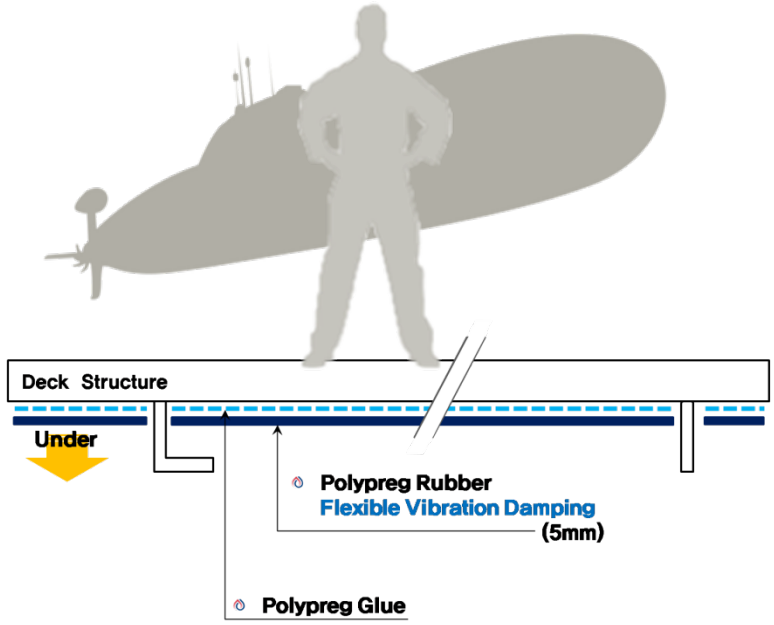
Surface materials for bulkheads and ceilings and similar exposed surfaces



Polypreg Rubber
Flexible Vibration Damping Rubber
5mm

IMO FTP Code Annex1, Part 5 & Part 2

Floor coverings and primary deck coverings

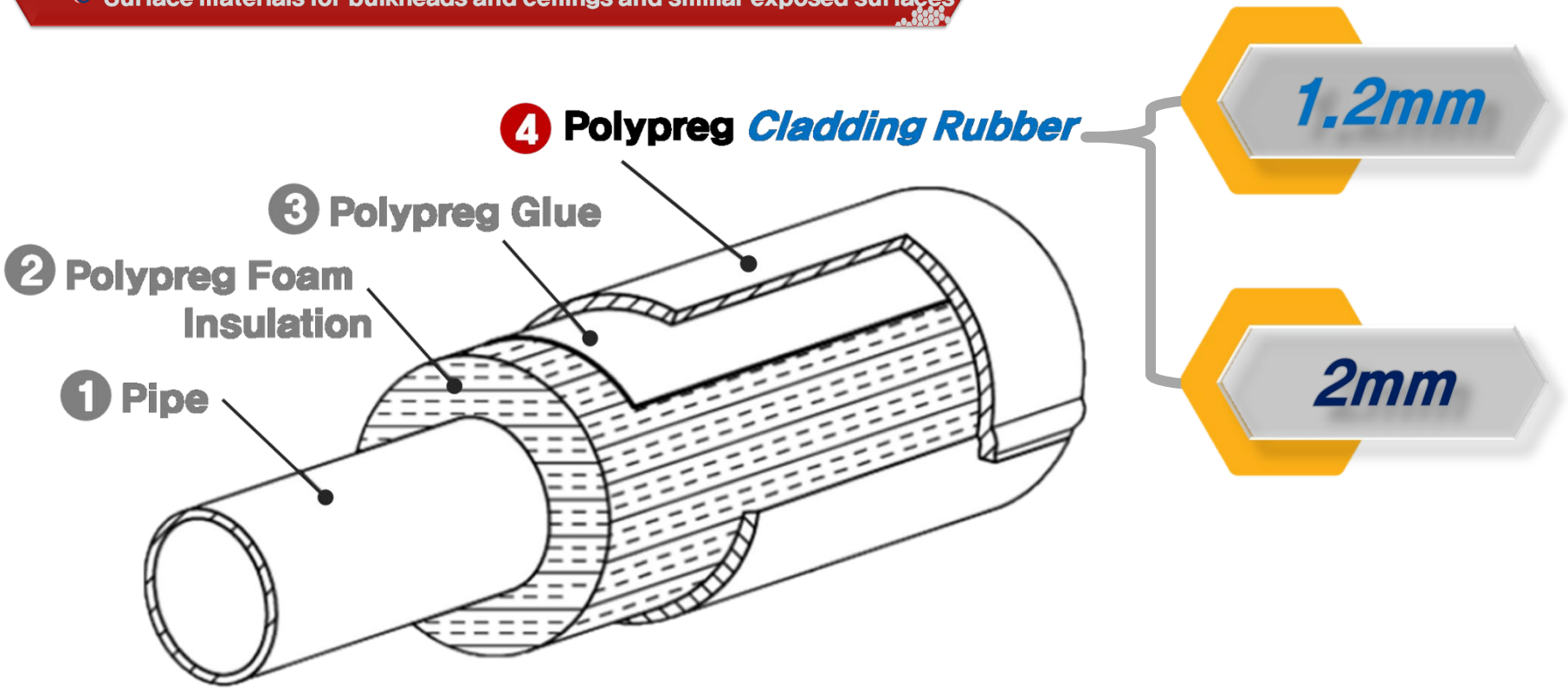


Application on board of Polypreg Cladding Rubber.

Polypreg *Pipe Cladding* Rubber

IMO FTP Code Annex1, Part 5 & Part 2

Surface materials for bulkheads and ceilings and similar exposed surfaces



MISCELLANEOUS PRODUCTS.

DF-JT350G
One component Glue

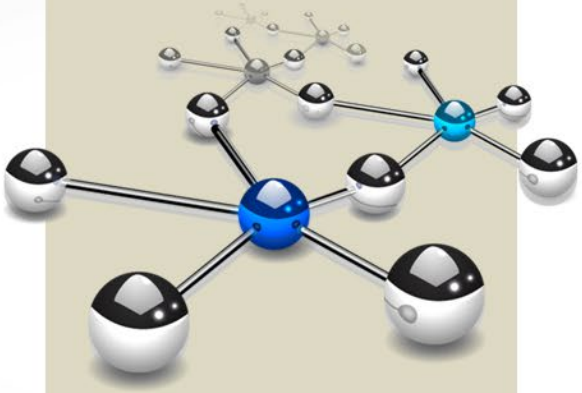
DF-SI350G
Two-component Glue

DNV-GL / MED TA In Progress

Characteristics
- Flame retardant glue with excellent flame retardancy.
- Excellent adhesion, durability, heat resistance and impact strength.
- Excellent wear resistance, water resistance and chemical resistance.

Usage
- Bonding steel plate with wood
- Bonding of steel plate and paper honeycomb(Fire door)
- Adhesion of building materials such as rock wool, glass wool, slate, hard boards, etc.
- Other adhesive requiring water and heat resistance

TAPE
Adhesive



THANK YOU

Contact Us :: Manufacture, Research & Development , Q/C, Sales

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