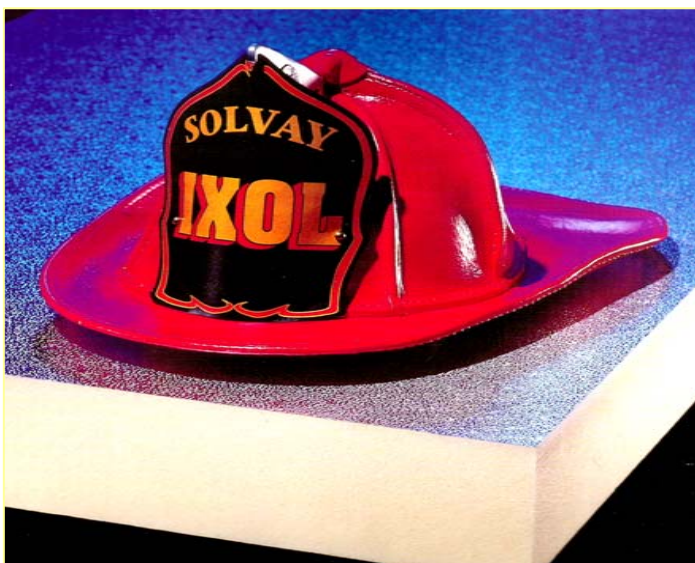


Solvay Special Chemicals

SOLKANE®



IXOL® B 251
IXOL® M 125

卤代聚醚多元醇

聚氨酯用高效反应性阻燃剂



议程 Agenda

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- 1. 基本物性和阻燃机理**
general characteristics & flame retardant mechanism
- 2. 国际应用经验**
international applied experiences
- 3. 国内应用探索**
application development in China
- 4. 应用推荐**
recommended application



基本物性

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产品型号		IXOL B251	IXOL M125
基本物性	单位	指标	
关能度		3	2
比重	g/cm ³	1.580	1.570
羟值	mgKOH/g	330	239
黏度 @ 25℃	mPa. s	7000	2900
溴含量	%	31.5	32
氯含量	%	6.9	7.0
沸点	℃	>160	>150
应用范围		硬泡	单组分泡沫 /胶粘剂/弹性体



应用优势

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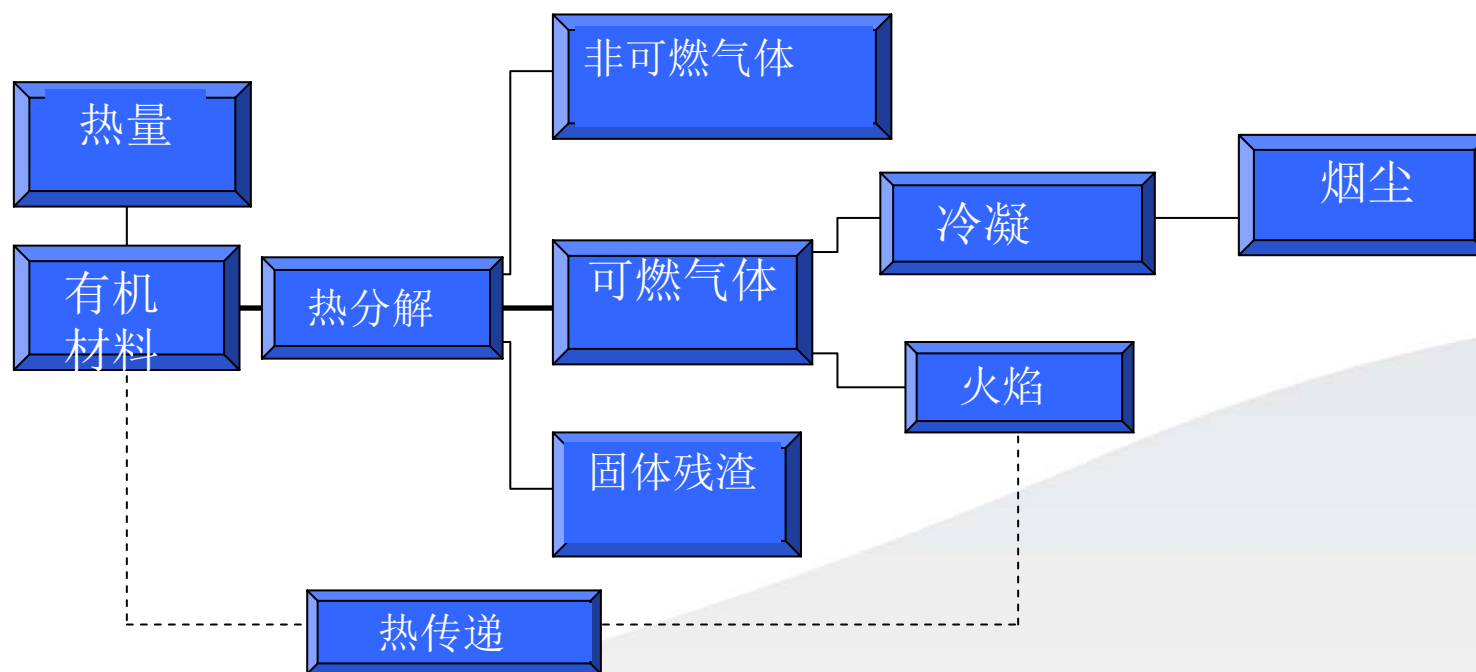


1. **IXOL B251&M125** 为反应型阻燃剂，可以将阻燃元素接枝于聚氨酯链结上，利于高效、长期阻燃性
2. 对产品本身的影响小
3. 合适的热分解温度 ($\geq 160^{\circ}\text{C}$)
4. 低粘度，易操作



燃烧过程

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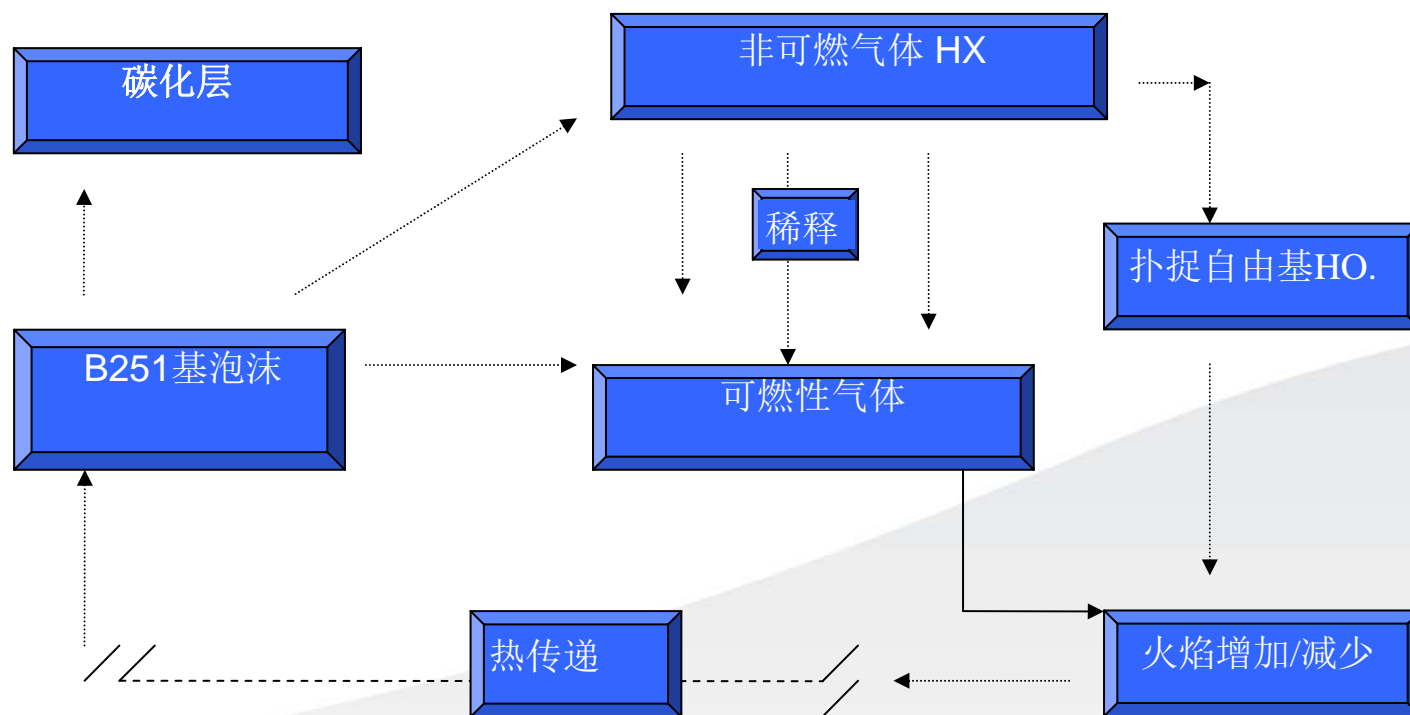


有机材料的燃烧过程



阻燃机理

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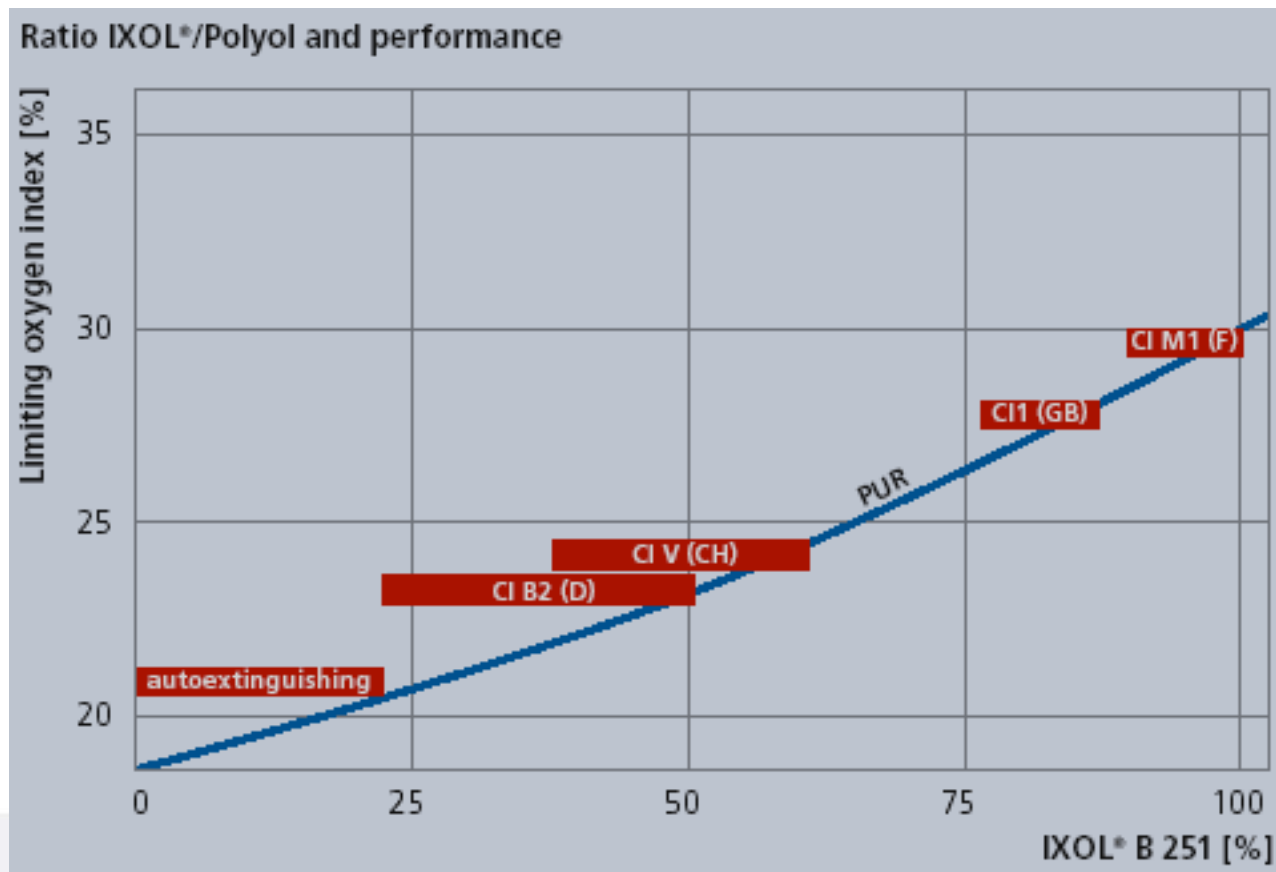


B251泡沫阻燃机理



国际应用经验

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调整用量可
满足欧、美
多国阻燃法
规



全尺寸墙角耐火性试验对比

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Density @ 35kg/m³

泡沫M 1 : **NFP92-501 class M1**; 相当于**DIN 4102 class B2**, 氧指数OI: **30%**

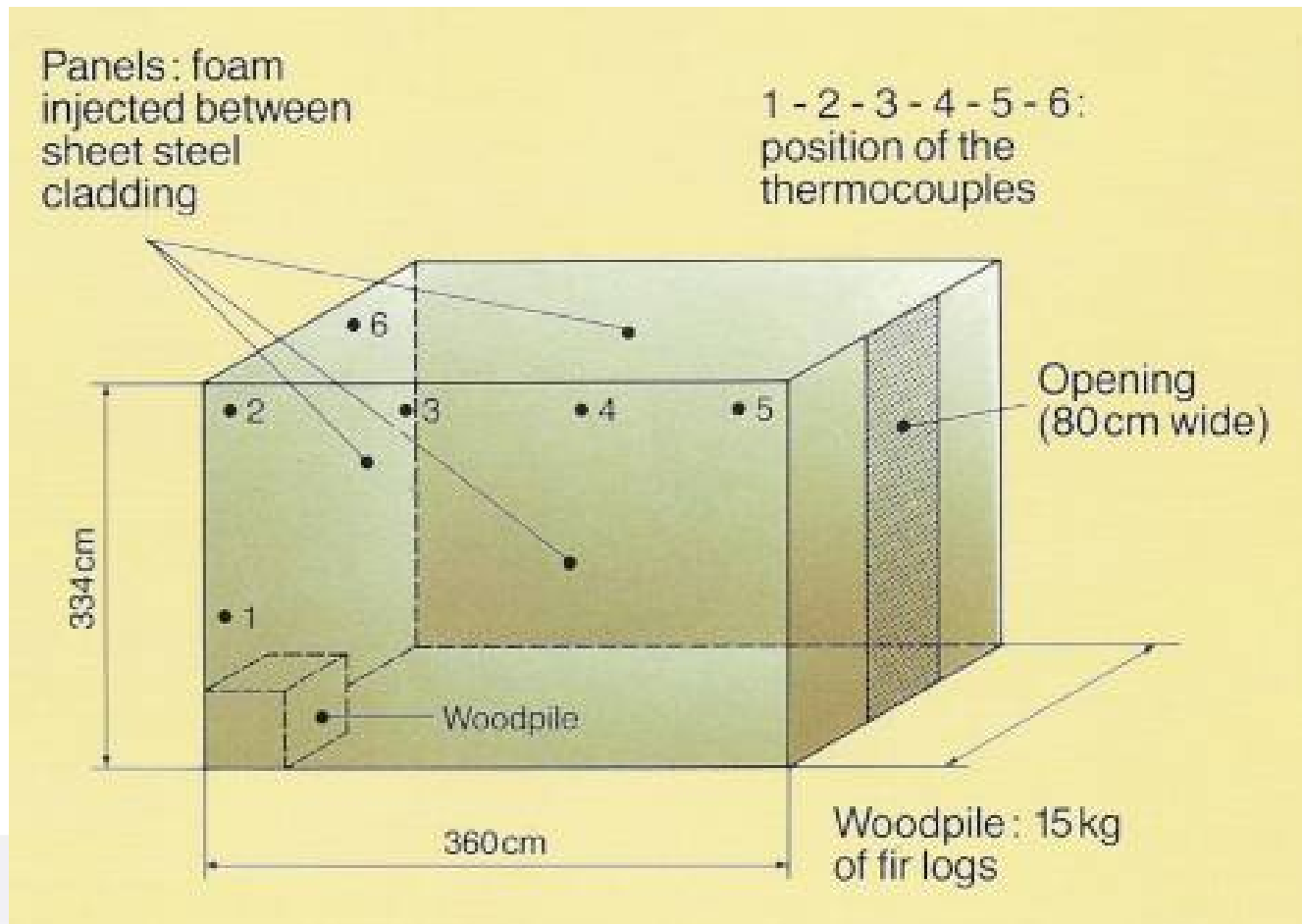
泡沫M 4 : **NFP92-501 class M4**; 相当于**DIN 4102 class B3**, 氧指数OI: **24%**

传统泡沫 **classical**: 相当于**DIN 4102 class B3**, 氧指数OI: **24%**



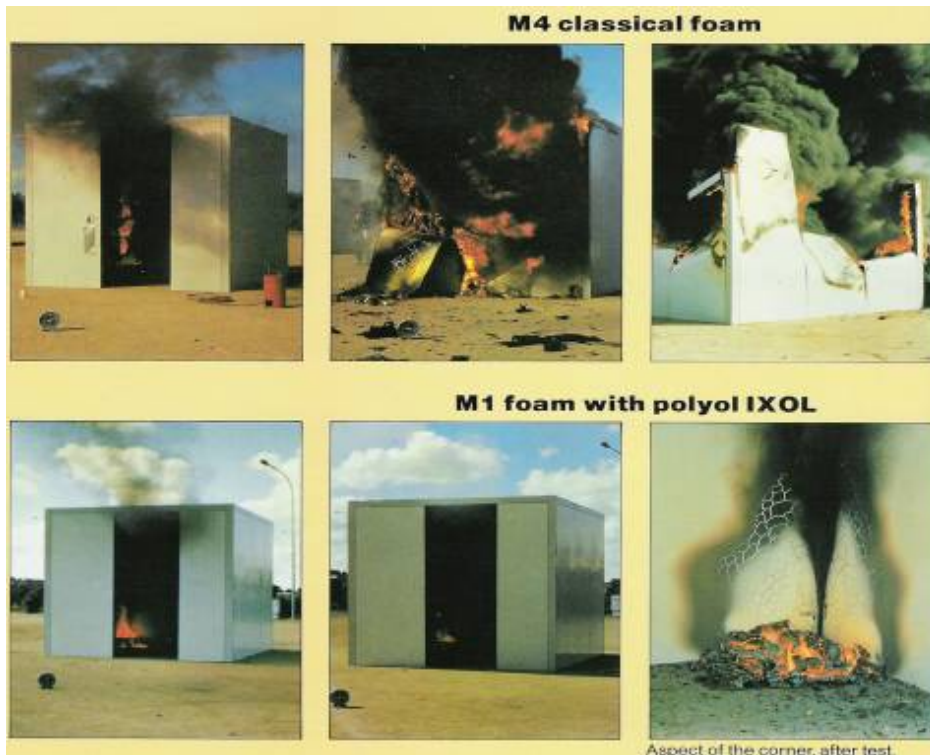
12cm厚夹芯板材墙角实验

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12cm厚 夹芯板材燃烧对比

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M4: 15min内烧尽 burned down within 15 min

M1: 燃烧45min 后, 大体完好 burned 45min later

CPUIA_2012_Shenzhen

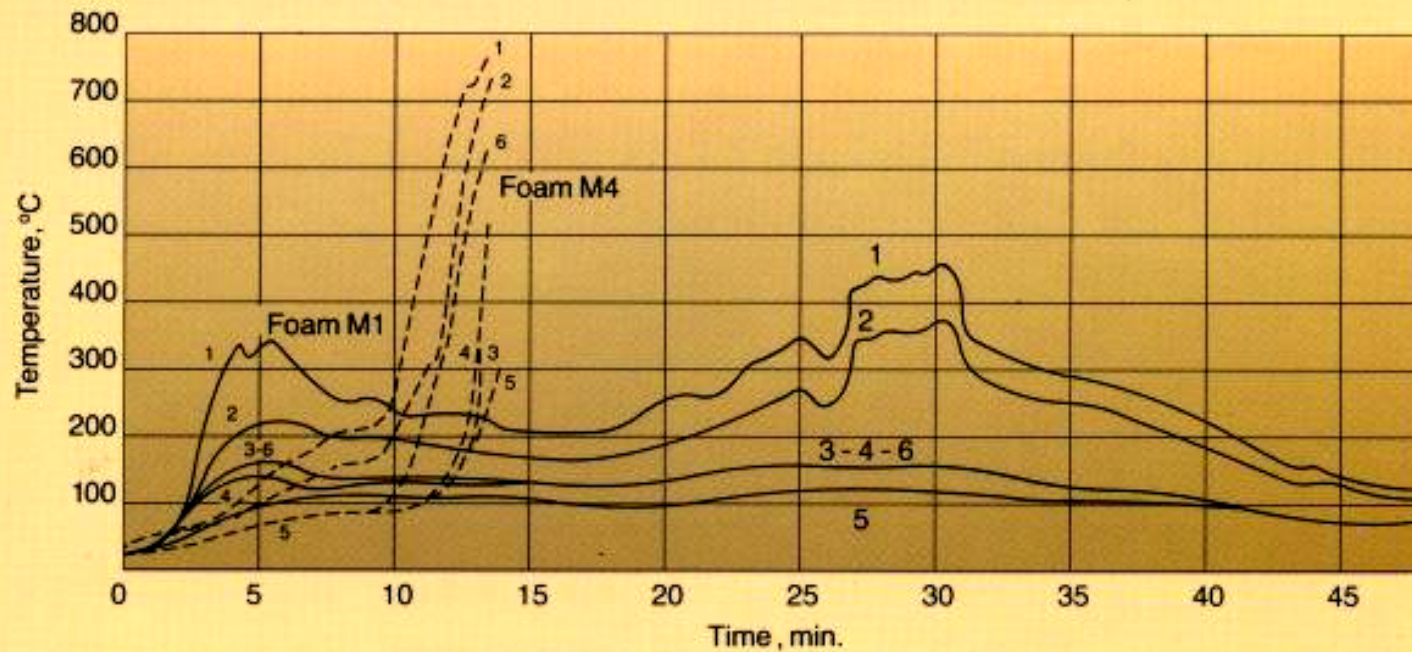


12cm厚 夹芯板材燃烧对比

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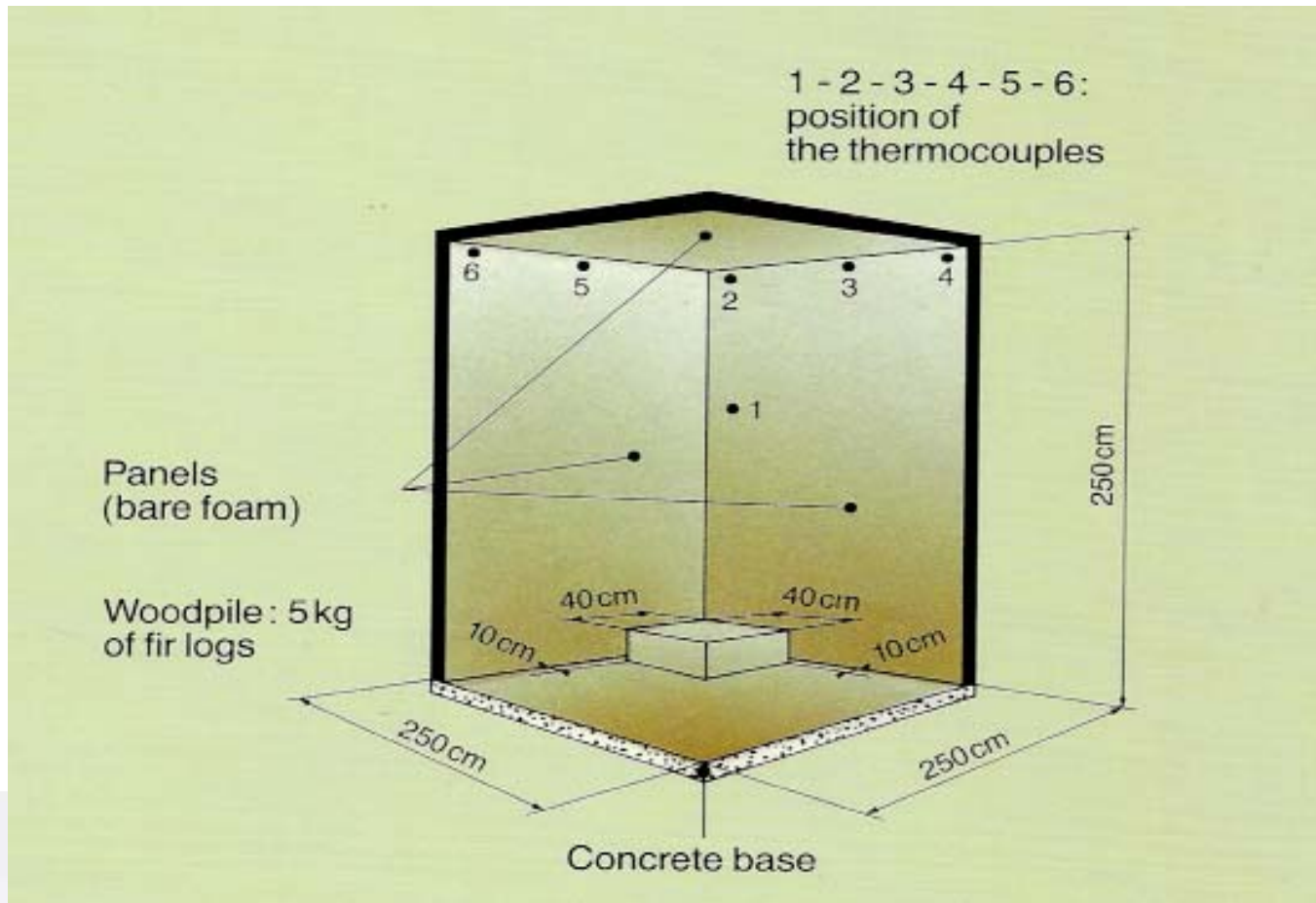


Comparison between industrial sandwich panels made of PUR foams classified as M4 and M1. Temperatures measured by the 6 thermocouples during the tests.



裸体喷涂泡沫燃烧对比

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裸体喷涂泡沫燃烧对比

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M1 foam based on IXOL

Classical foam M4

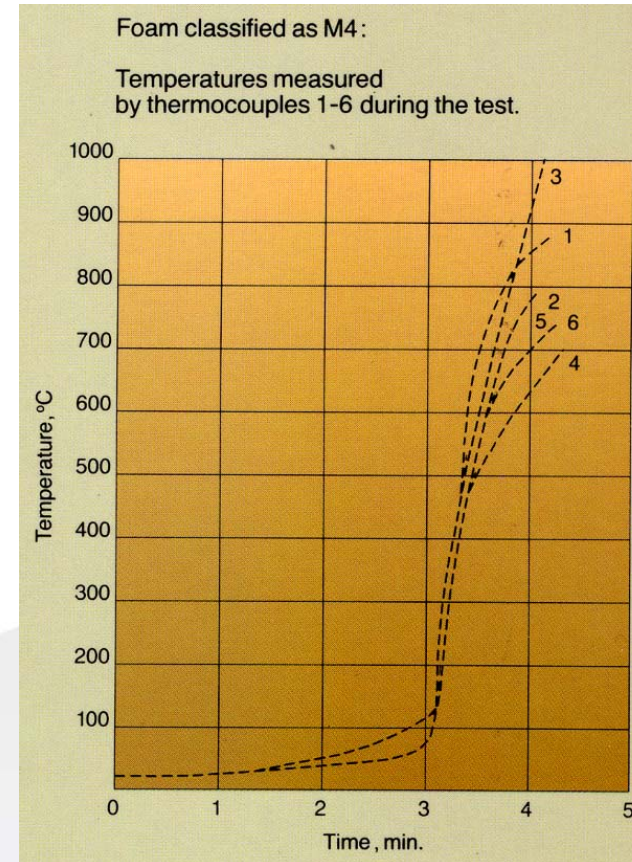
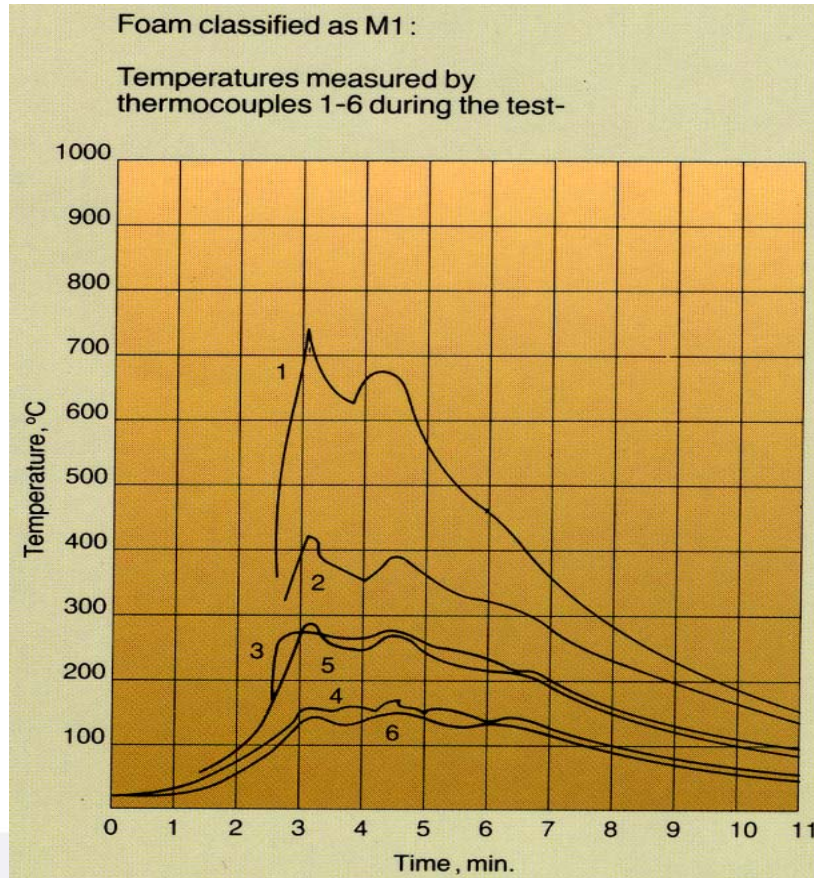
M1 foam based on IXOL

Classical foam M4



裸体喷涂泡沫燃烧对比

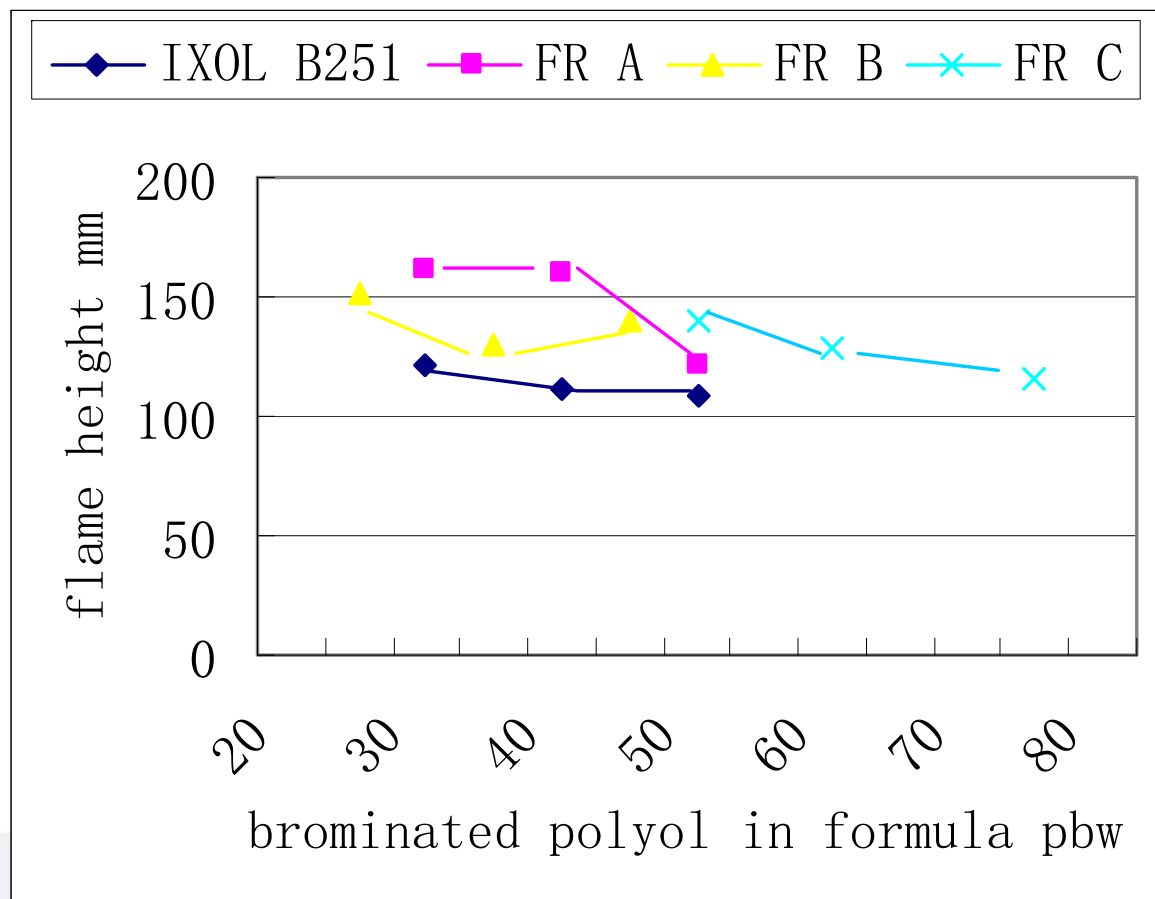
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B251与同类阻燃剂比较

ISO 11 925-2

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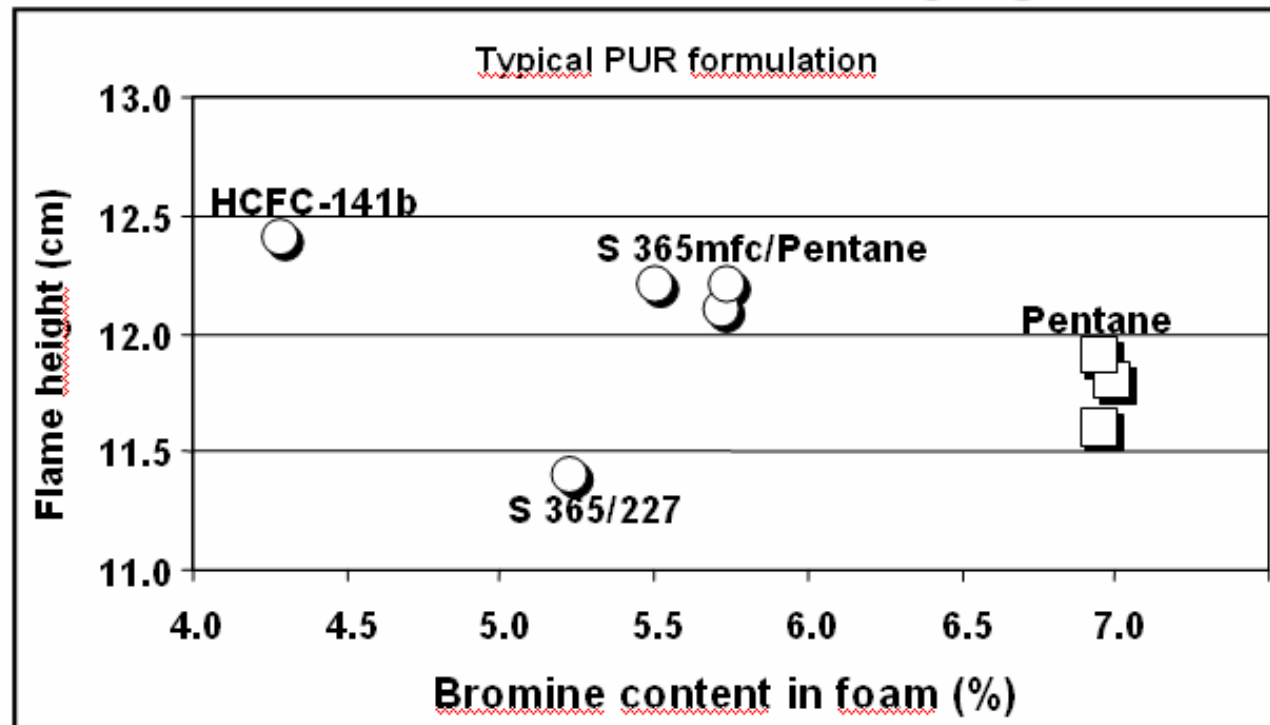
B251 表现最好
低用量下较小的火焰高度





B251与发泡剂的协同性 ISO 11 925-2

Bromine content – blowing agent



IXOL B251 与
365/227 发泡剂
协同提高泡沫阻
燃性

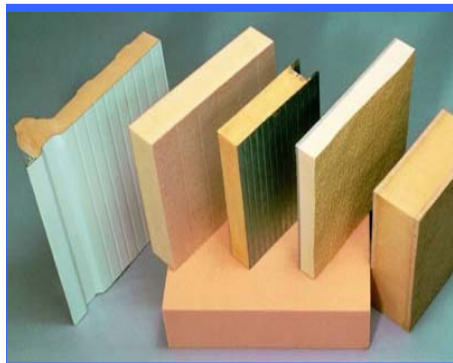


国际应用示例

SOLKANE®



喷涂泡沫
块状泡沫
间歇板材
连续层压板材



M125 国际应用示例

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单组分泡沫

胶粘剂：用于PIR/岩面/XPS/EPS夹芯板的粘接



中国市场状况

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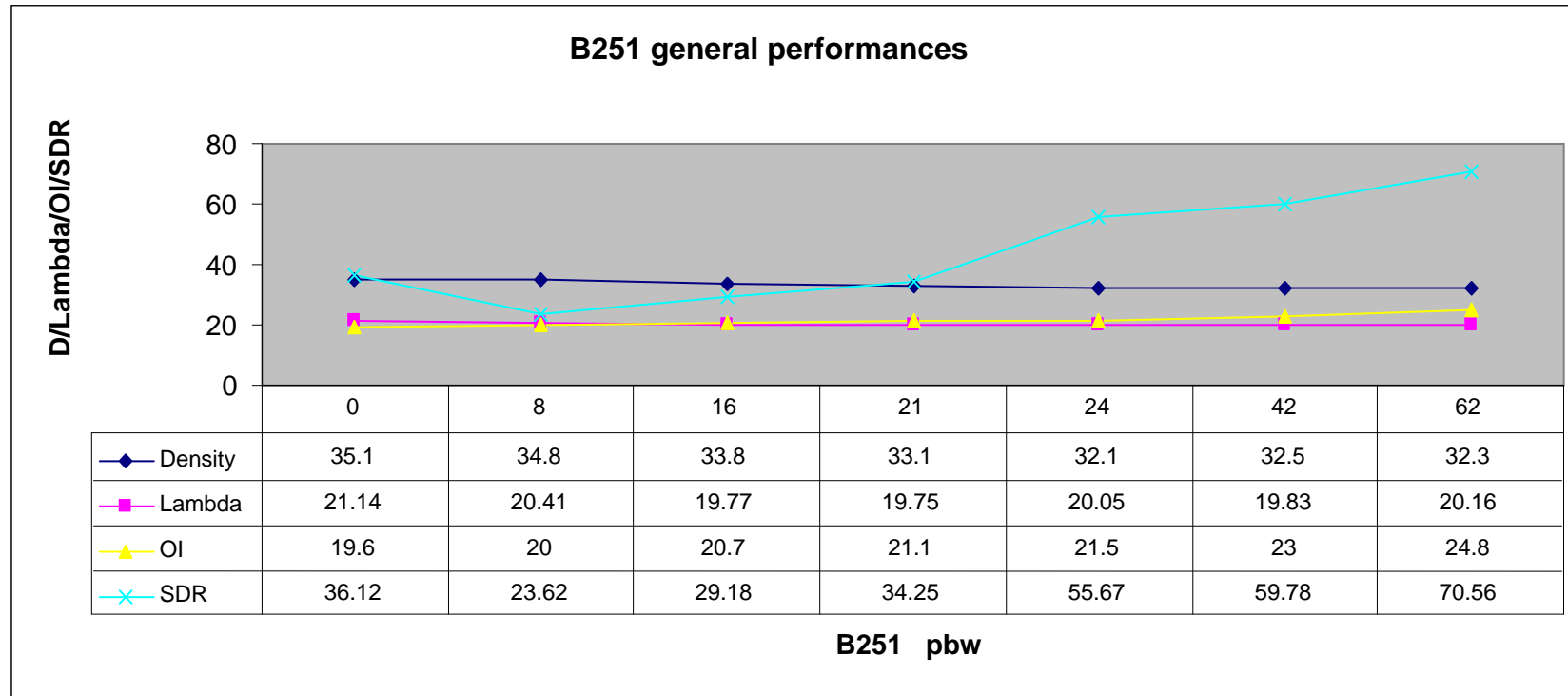
1. 要求B1 or B2 级以上泡沫，关注烟密度，要求氧指数大于32,28,26

2. 对成本非常敏感



B251 基于国产主原料的基本表现

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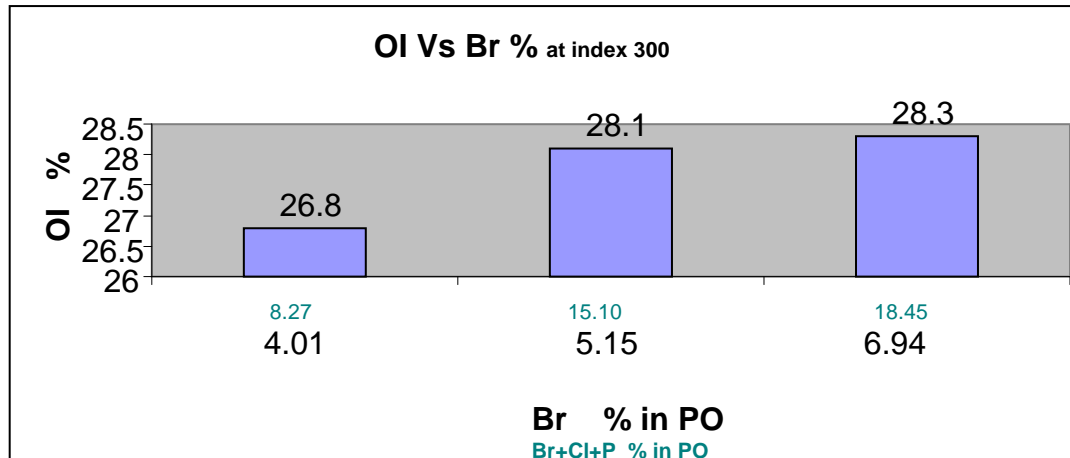
1. 低密度化，从而优化导热系数
2. 氧指数明显增加
3. 烟密度 增加但可控在标准范围



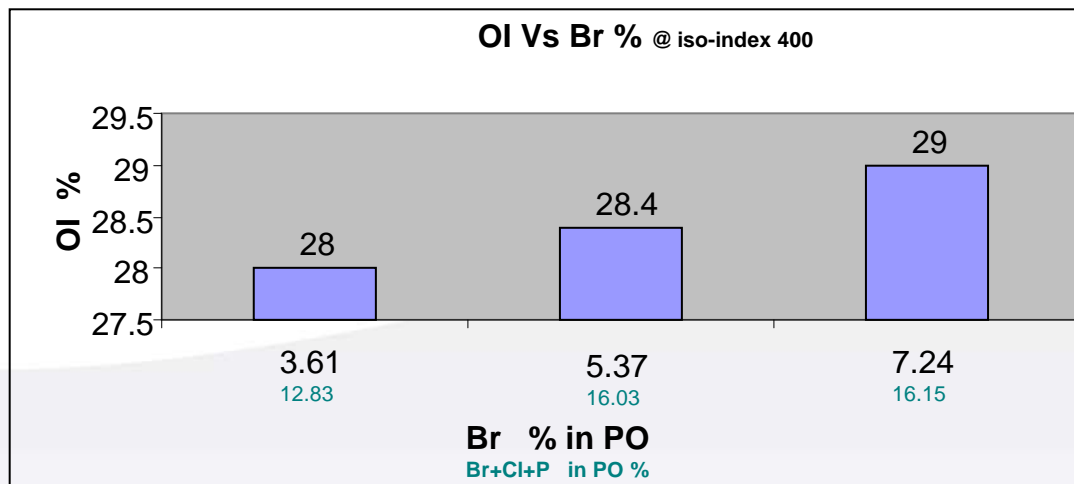
PIR 中B251的表现

B251 performance in PIR

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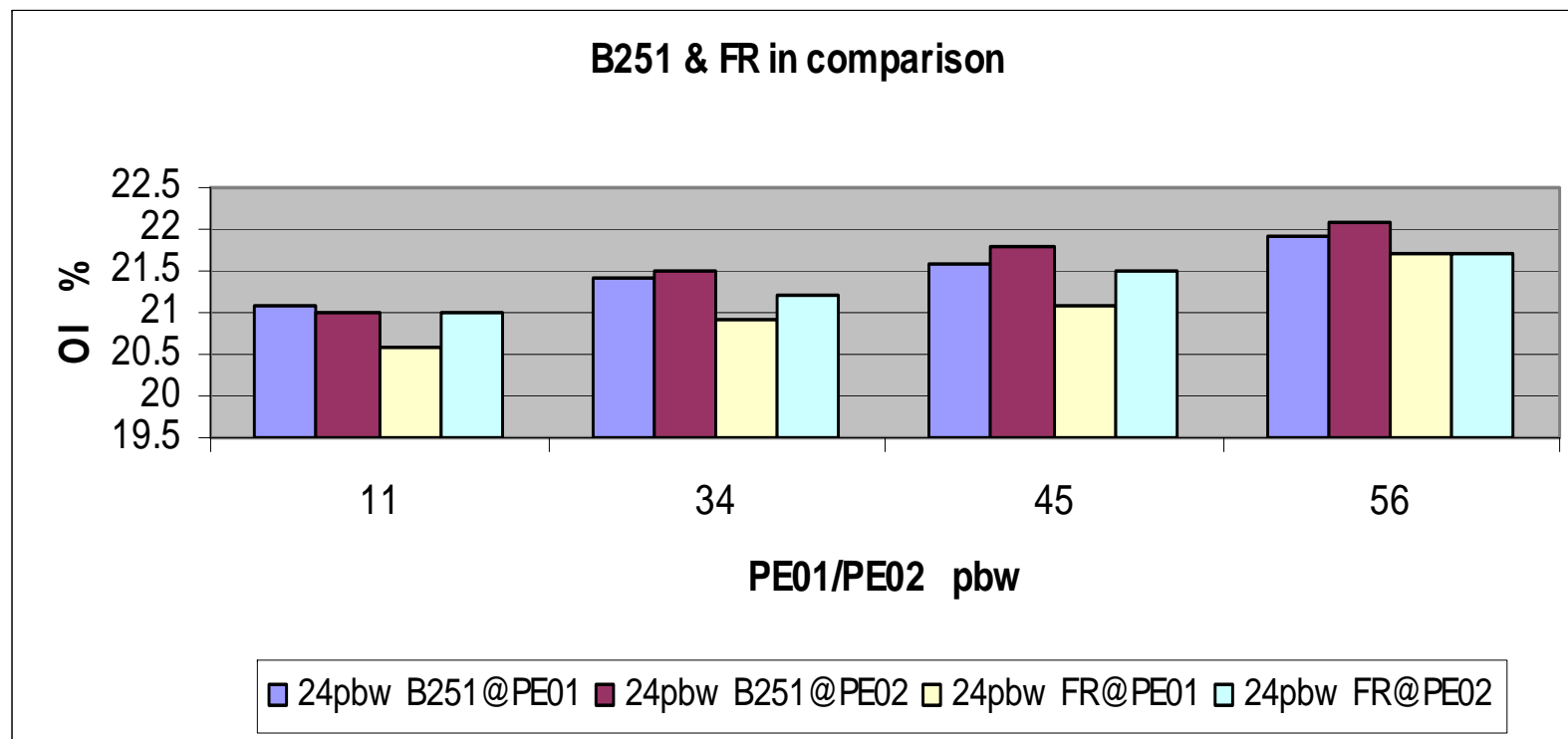


1.高指数下Br 对OI的贡献大于P +Cl



B251 与同类阻燃剂FR的比较

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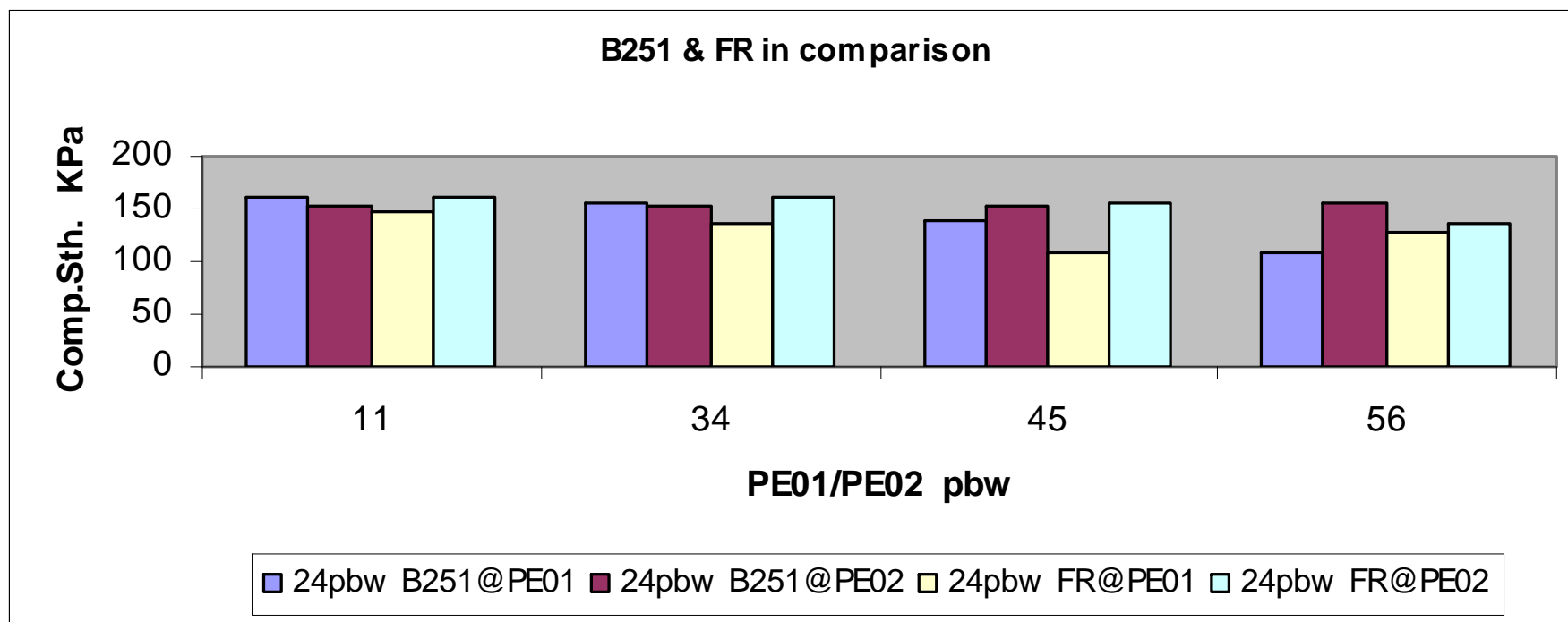


- 1.在氧指数方面，B251与各种聚酯的协同作用都优于同类阻燃剂FR.
- 2.低羟值聚酯比高羟值更有利于提高氧指数



B251 与同类阻燃剂FR的比较

SOLKANE®

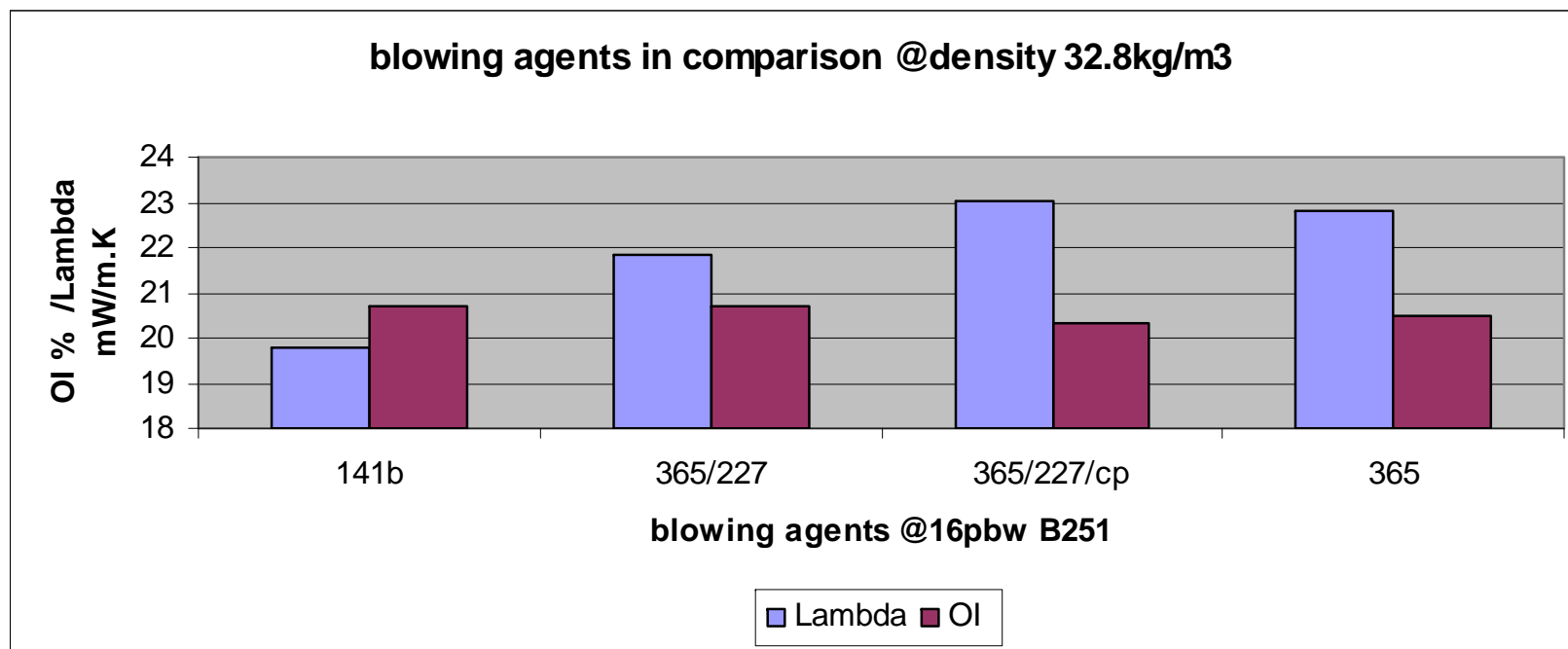


- 1.在压缩强度方面，B251与高羟值聚酯的协同作用好于竞争者，与低羟值聚酯的协同作用与竞争者相当
- 2.低羟值聚酯有利于提高泡沫抗压强度



B251 基泡沫不同发泡剂比较

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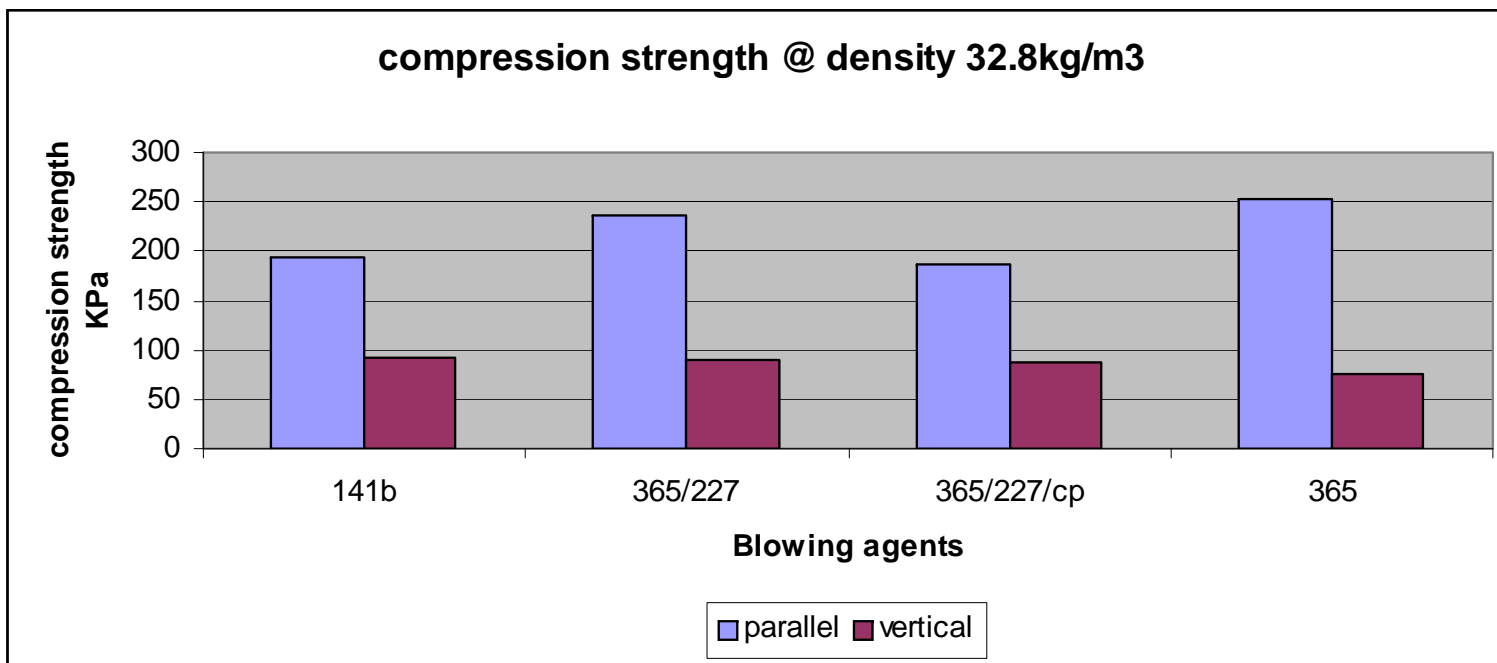
1.对于Lambda而言，141b最好，365/227优于365，更优于365/227/cp共发泡

2.对氧指数而言，365/227和141b基本相当，优于纯365发泡，更优于365/227/Cp共发泡。



B251 基泡沫不同发泡剂比较

SOLKANE[®]



1.对于压缩强度而言，365最好，365/227优于141b，更优于365/227/cp共发泡



应用推荐

SOLKANE®



B251:

喷涂泡沫
块状泡沫
间歇板材
连续层压板材

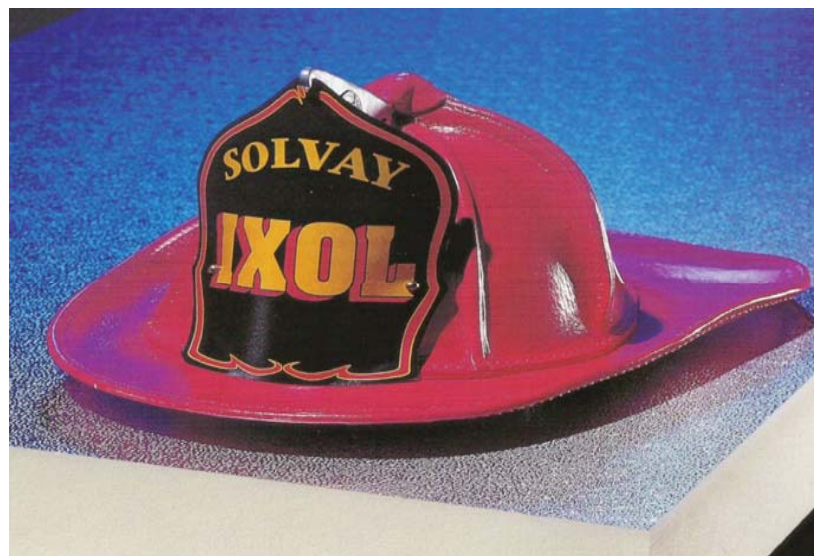
M125:

单组分泡沫
夹芯板胶粘剂PIR/岩棉/XPS/EPS



Solvay Special Chemicals

SOLKANE®



谢谢关注IXOL阻燃聚醚

