



# **Polystyrene foam flame retardant solutions**

**SHANDONG SUNRIS NEW MATERIALS CO.,LTD.**



EPS

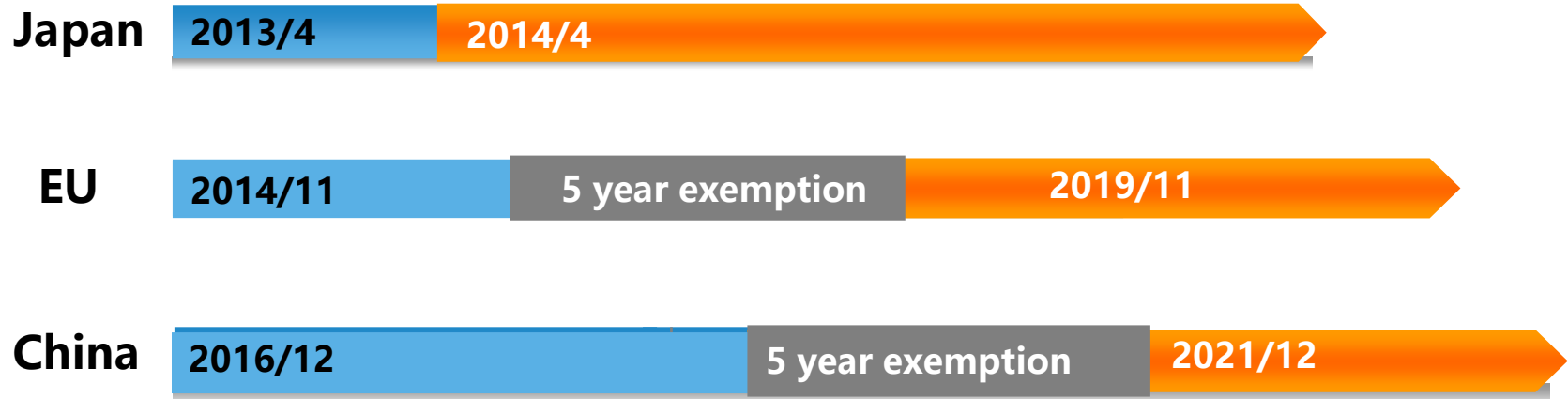
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XPS



## HBCD Banned




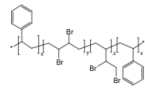
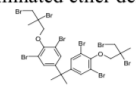
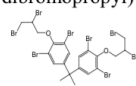


## Assessment of HBCD alternatives

	HBCD	PFR (SR-105)	SR-801	BDDP (SR-800)
<b>CAS Nr.</b>	25637-99-4	1195978-93-8	97416-84-7	21850-44-2
<b>Br%</b>	75	≥65	≥65	67.7
<b>-5% TGA °C</b>	248	262	267	320
<b>Companies</b>	Sunris	ICL、Lanxess、 Sunris	Sunris、DKS	Sunris



# Environmental protection assessment of HBCD alternatives

Chemical  For full chemical name and relevant trade names see the hazard profiles in Section 4.8	CASRN	Human Health Effects											Aquatic Toxicity		Environmental Fate		
		Acute Toxicity	Carcinogenicity	Genotoxicity	Reproductive	Developmental	Neurological	Repeated Dose	Skin Sensitization	Respiratory Sensitization <sup>1</sup>	Eye Irritation	Dermal Irritation	Acute	Chronic	Persistence	Bioaccumulation	
Hexabromocyclododecane (HBCD) 	25637-99-4; 3194-55-6	L	M	L	M	H	M	M	L			VL	VL	VH	VH	H	VH
Butadiene styrene brominated copolymer <sup>v</sup> 	1195978-93-8	L	L	L	L	L	L	L <sup>d</sup>	L			M	L	L	L	VH	L
TBBPA-bis brominated ether derivative <sup>v</sup> 	97416-84-7	L <sup>s</sup>	M <sup>s</sup>	M <sup>s</sup>	M <sup>s</sup>	M <sup>s</sup>	L	M <sup>s</sup>	L <sup>s</sup>			L	L	L	L	H	H
TBBPA bis(2,3-dibromopropyl) ether <sup>v</sup> 	21850-44-2	L	M	M	M	M	L	M	L			L	L	L	L	VH	H

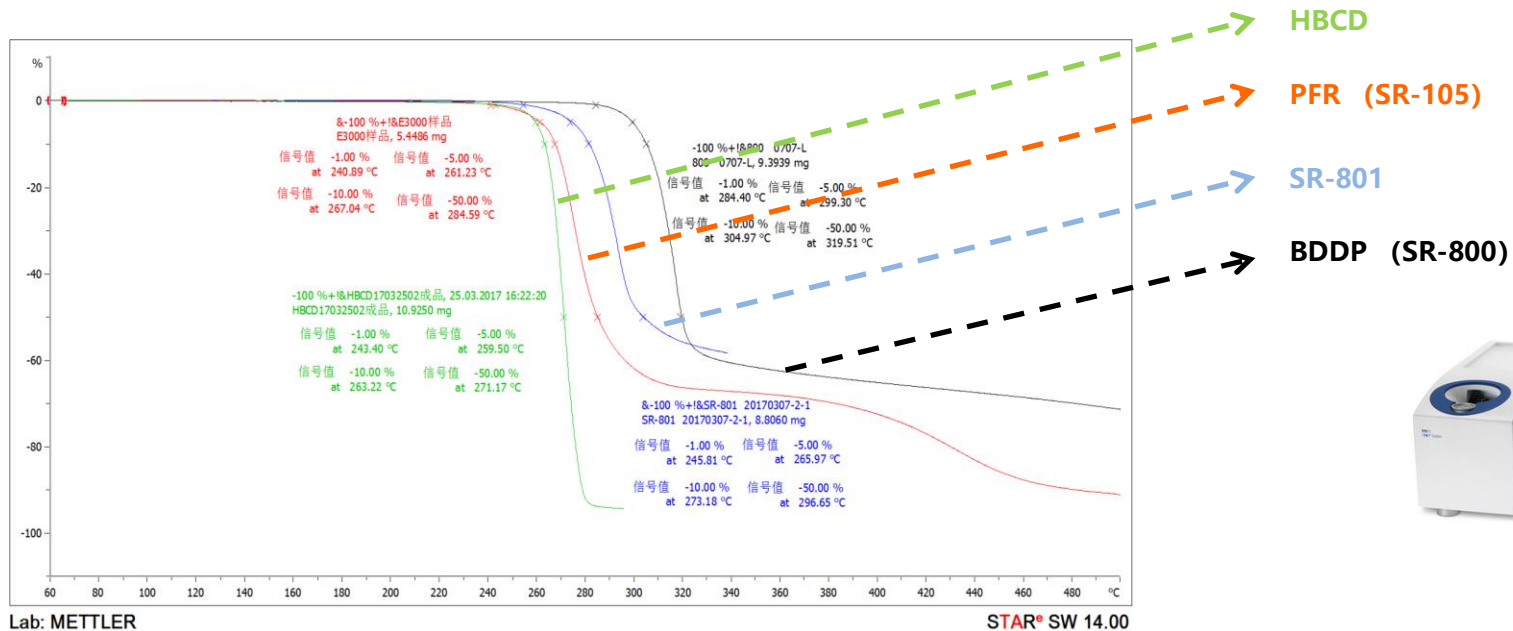
<sup>1</sup> At this time, there are no standard test methods for respiratory sensitization and no test data; as a result there was no designation for this endpoint.

**Environment friendly:**

PFR (SR-105) > SR-801 > BDDP (SR-800)

EPA report June 2014

# Flame retardant efficiency assessment of HBCD alternatives



## Flame retardant efficiency :

HBCD has the best match with the decomposition temperature of the base material, and high flame retardant efficiency;

HBCD > PFR (SR-105) > SR-801 > BDDP (SR-800)



## PFR (SR-105):

- Environmentally friendly flame retardant solution.
- Little impact on suspension polymerization reaction system (initiator dosage, system viscosity, reaction rate, particle size). The reaction system is the same as HBCD.
- The recommended dosage is 1.2-1.3 times of HBCD.
- Excellent comprehensive performance of polystyrene foam insulation board.
- Suitable for EPS, XPS.
- Widely used in EU, Japan, Canada, USA ...and pass building and construction mandatory fire tests



**Sunris旭锐**



**Sunris旭锐**



**SHANDONG SUNRIS NEW MATERIALS CO.,LTD.**

*[www.sunrials.com](http://www.sunrials.com)*





## Enterprise Profile



### Basic information

Founded: 2009/7

Employee: 750

Focus on **Flame Retardants**



### A national R&D platform

Qingdao National and Local Joint  
Engineering Research Center

Weifang Chemical Engineering  
Collaborative Innovation Base



### Focus on 2 major application areas

Engineering Plastic

Construction Insulation material



### 5 hidden champion products

SR-BDP、SR-105、SR-

801、SR-BPS、SR-103

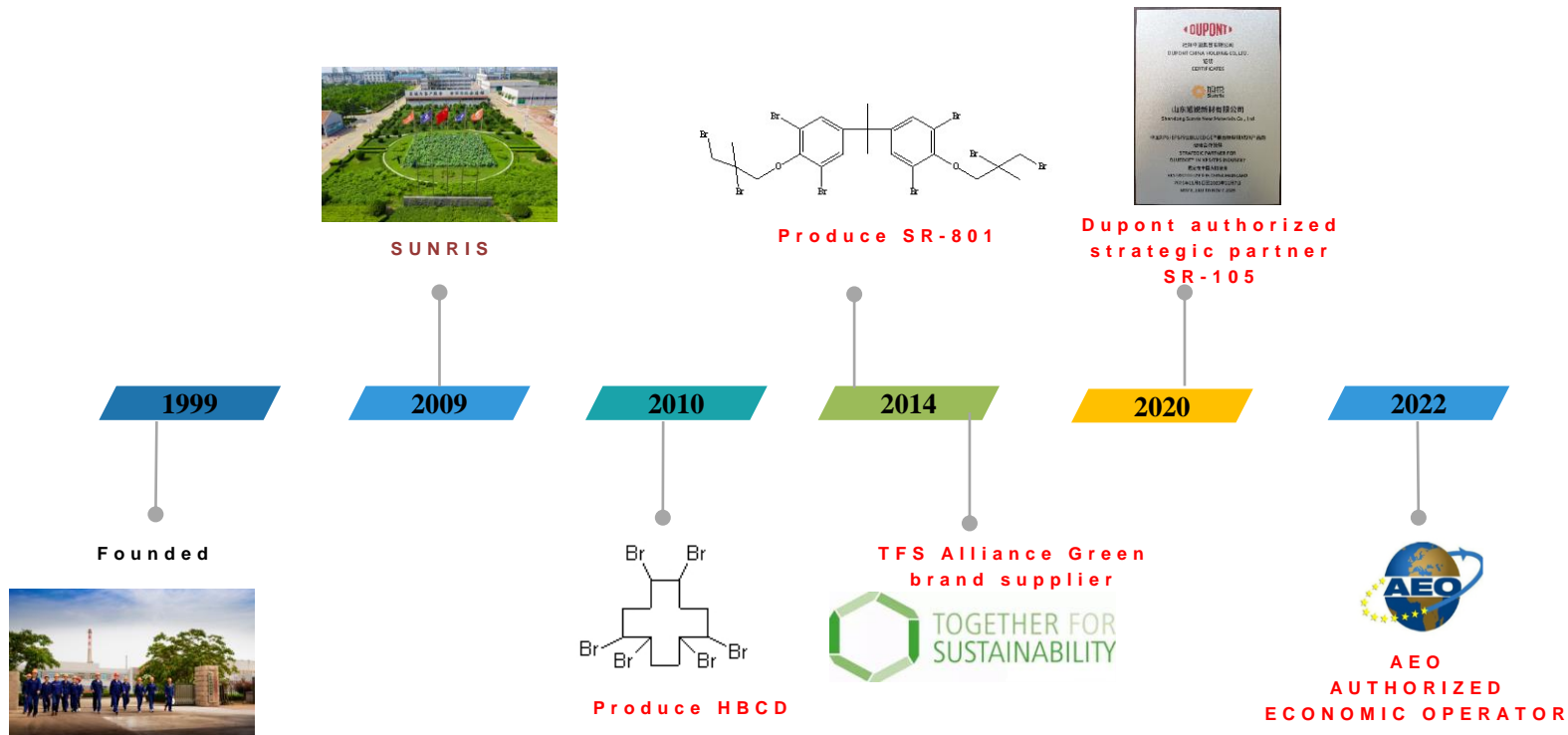
## System certification



In 2014, 2016 and 2018, Sunris has successively passed the audit of "Working Together for Sustainable Development - Chemical Alliance" (TFS) of the international chemical industry, which is the only enterprise in China with the green brand.

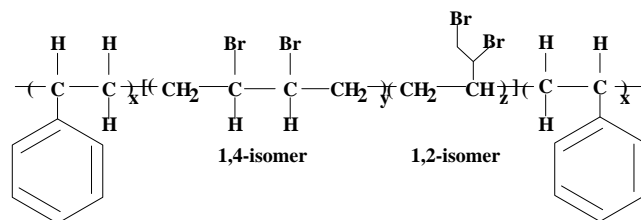


# Development





## Alternative 1: SR-105



**Production capacity 6000 MT/Year**



# DuPont Authorization: The only partner in Asia Pacific



**DuPont™ BLUEEDGE™**

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**美国杜邦特种电子材料公司**

证明

**山东旭锐新材料有限公司**


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NEWS RELEASE

**DuPont Announces 3rd Licensee of BLUEEDGE™ Polymeric Flame-Retardant Technology**

*Company selects Shandong Sunris New Materials Co., LTD., Shandong, China, as its third licensee partner for BLUEEDGE™ Polymeric Flame-Retardant Technology.*

*Technology license agreement demonstrates DuPont's "Safer By Design" commitment in support of its 2030 Sustainability Goals.*

**WILMINGTON, Del., May 28, 2020** – Underscoring the importance of driving sustainability through innovative technology and application of green chemistry, DuPont (NYSE: DD) today announced the selection of Shandong Sunris New Materials Co., LTD as its latest technology license partner for BLUEEDGE™ Polymeric Flame-Retardant Technology.

BLUEEDGE™ technology is a sustainable, polymeric replacement for flame retardants currently used by the building industry in extruded polystyrene (XPS) and expanded polystyrene (EPS) foam insulation products. It replaces hexabromocyclododecane (HBCD), a common flame retardant with a less favorable environmental profile that has been phased out in much of North America, Europe, and parts of Asia and is scheduled to be banned in China by the end of 2021.

"Technology innovations like BLUEEDGE™ are essential to enabling the transition to sustainability in the built environment, and we're excited to help lead that transition as we take one more step towards facilitating a global conversion," said Tim Lacey, global vice president & general manager, DuPont Performance Building Solutions. "Our objective is straightforward—offer solutions that drive ever-higher standards of sustainability, quality, performance, and safety that work in many building environments to meet the increasing demands of energy efficiency and architectural design."

Shandong Sunris New Materials Co., LTD is a leading Chinese flame-retardant producer for XPS/EPS external thermal insulation application. The addition of BLUEEDGE™ technology to their current product portfolio is a natural complement that enables them to move their production towards next-generation sustainable flame retardants. Shandong Sunris New Materials Co., LTD.'s local manufacturing footprint and capability, technical readiness, established relationships with local authorities, longstanding relationships with XPS/EPS manufacturers, and channel strength made it a strong choice in the selection of the third BLUEEDGE™ technology licensee.

[www.sunrisais.com](http://www.sunrisais.com)



## Alternative 2: SR-801



**Production capacity 18000 MT/Year**



## Sunris Patents

SR-105 has 2 authorized invention patents:

SR-801 has 2 authorized invention patents:





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**Become the Hidden Champion  
of Flame Retardants**



# WELCOME TO SUNRIS



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