

ABS plays a very important part in the electronics industry. It is used mainly for the production of housings of computers and office equipment.

Its flammability involves a real hazard to users and it has been necessary to improve significantly its fire retardancy. This has been achieved mainly by the use of brominated fire retardants employing antimony trioxide as a synergist.

This data sheet provides preliminary information on the preparation of [FR ABS](#).

An FR system is always better introduced as a masterbatch concentrate in order to improve its dispersion. Usually masterbatch concentrates will contain circa 70-80% of FR's including antimony oxide and the carrier is selected to achieve optimal compatibilization with the polymeric matrix. For ABS, SAN, SBR, HIPS/PS or Kraton type of copolymers can be used.

The type of ABS may have a considerable influence on the formulation to reach V-0 and on the properties. We have used a general purpose and a high impact grade and we have added in the formulation some additives usually recommended for ABS applications.

The various FRs are chosen as follows:

[FR-1524 TBBA](#) is cost effective but is limited in thermal stability; if processing temperature are above 240°C, a discoloration is observed. Impact properties may be impaired and use of a high impact grade ABS is recommended.

[FR-1808 Brominated Indan](#) is a new brominated flame retardant developed in order to address market needs for thermal stability, cost efficiency, compoundability and flow enhancement. Moreover, FR-1808 is not related to diphenyloxy chemistry and in contemporary terms, it may be viewed as environmentally friendly material.

[FR-1208 OCTA](#) used to be very popular for ABS. Like TBBA, it is melt blendable and has a good compatibility with ABS resulting in fairly good impact properties. It has excellent thermal stability for high processing temperatures up to 260-280°C. Its weakness is its poor color UV stability: It is recommended for dark formulations.

[F-2016 BEO](#) is a new polymeric FR additive based on a thermoplastic brominated epoxy oligomer with a low molecular weight specially designed for application in ABS.

F 2016 is suitable for compounds with high UV stability and it has an efficient flame retardancy. In some application, its mixture with TBBA (FR-1524) has proven cost efficient offering an excellent compromise of properties. It is recommended to prepare blend of F-2016 and TBBA (FR-1524) at 50/50 based on bromine contents.

F-3000 MBEO series is based on modified brominated epoxy oligomers which provides to HIPS and ABS an optimal answer for light stability and impact properties.

FR-245* Brominated cyanurate (67% of bromine) is being offered more recently in the market as a melt blendable FR combining good impact properties with UV stability.

For more details on the properties and application data of these FRs, please refer to our various data sheets, application data sheets and articles dealing with FR for styrenic copolymers.

* Regarding availability of this FR in your territory, please ask our Office or Agent.

We suggest the use of the following rules for formulations to pass the standard UL 94:

Class	Thickness	Non Polymeric FRs	Polymeric FRs
V-0	3.2mm	9-10% Br	8-9% Br
V-0	1.6mm	12-15% Br	10-12% Br
Load of antimony trioxide		3-5% for both types of FR's	
V-1 or V-2	Any thickness	8-10% Br	
Load of antimony trioxide		0.5-2%	
Optional 0.3-1% of Teflon 60 or Hostafion 9202 as antidripping agent			

Properties obtained in high impact (HI) or General Purpose (GP) ABS are summarized in the following table:

Flame Retardants for ABS

Type of FR	TBBA FR-1524	OCTA FR-1208	BEO F-2016	Br Indan FR-1808	MBEO F-3020
Composition, %					
ABS (GP or HI)	76.7 (GP)	78.7 (GP)	71.3 (HI)	76.2 (GP)	71.2 (GP)
Brominated FR	17	15.4	21.6	15.8	21.4
Antimony trioxide	6	5.6	6.8	7.7	7.1
UV stabilizers	0.3	0.3	0.3	0.3	0.3
Bromine content, %	10	12	11	12	12
Properties:					
MR, g/10 min (220°C-10Kg)	145	90	48	70	60
Izod notched, J/m	37	92	121	90	80
HDT (1.8 Mpa), °C (annealed 24h 65°C)	77	83	86	84	82
UV stability: (DE) (200 h-Xenotest)	25	35	2.5	30	7
UL 94 (1.6 mm)	V-0	V-0	V-0	V-0	V-0
Blooming 1month RT	slight	slight	none	slight	none

We are at your disposal for further information if needed,

Dead Sea Bromine Group
Flame Retardant SBU
Technical Service

ABS Gnl 07/09/98

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FR-1208 (OCTA)

flame
retardants

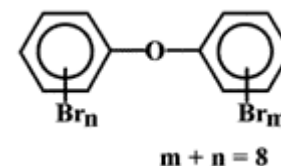
Chemical name: Octabromodiphenyl oxide

Formula: $C_{12}H_2Br_8O$

CAS Number: 32536-52-0

%Br: 78

MW: 801



General & Use:

FR-1208, octabromodiphenyl oxide, is an inert, additive flame retardant, containing 78% aromatic bromine. This high bromine content, coupled with its specific melting range, makes it the material of choice for styrenic copolymers such as ABS. Its use is recommended for injection moldings, especially those in which high surface quality is desirable.

For health & safety matters please refer to MSDS

Typical Properties:

Appearance	OFF WHITE TO LIGHT YELLOW POWDER
Bromine Content %	78
Specific Gravity	2.9
Volatiles %	0.15
Melting Range C	70 -- 150
Iron (Fe) ppm	8

Thermogravimetric Analysis (10°C/minute, air)

Weight loss (%)	°C
5	304
10	322

Solubility

Solvent	g/100g at 25°C
Water	<0.1
Methanol	0.3
Toluene	7
Methyl ethyl ketone	16

Please note that the values indicated do not constitute specification limits. To obtain current specification refer to your local sales Office/Representative or DSBG Head Office at address herein.

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Storage and Handling:

FR-1208 is stable over long periods of storage. Store in dry, cool, ventilated area.

For more information Please Contact Us

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