



Reduced Antimony Trioxide (ATO) Flame Retardant Solutions For healthier and more environment friendly products

Antimony Trioxide Regulatory Status:

- A carcinogen is a substance that may cause cancer or increase its incidence by inhalation, ingestion, or skin absorption.
- Antimony Trioxide (ATO) is classified as Carcinogenic Cat 2 via inhalation route according to GHS and CLP rules.
- NTP interpretation of the results of animal toxicity studies could impose additional hazard classifications: lung toxicity and reproductive toxicity.
- Antimony trioxide is currently evaluated by ECHA due to its potential genotoxicity.
- Additional tox studies are requested by ECHA.
- Result: more stringent classification would be applicable.

Future Regulation:

Future regulation may change ATO classification and will follow by restrictions and bans:

Current	Possible
<ul style="list-style-type: none">• Carc. category 2, inhalation route only (Sb 3+ powders only)• STOT RE category 2 (lung toxicity)• NO reproductive toxicity classification	<ul style="list-style-type: none">• Carc. category 1B, all exposure routes (all physical forms)• STOT RE category 1• Repr. category 2

Occupational exposure limits might get more restricted:

Current	Possible
<ul style="list-style-type: none">• 0.5 mg inhalable Sb/m³	<ul style="list-style-type: none">• 0.1 mg respirable Sb/m³• 0.006 mg respirable Sb/m³

Kafrit solutions - Reduced/Free ATO

- Reducing the Amount of ATO will decrease possible health issues.
- New products with reduced amount of ATO or without ATO at all are now available.
- Suitable for different polymers: ABS, PP & PE.
- Design for future change in the regulations.

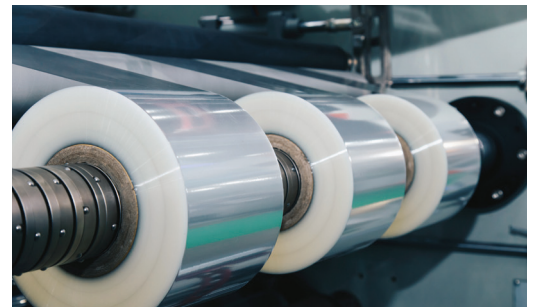
ABS Boards

	Standard product	New product
Product	FR 0M09B ABS	FR 00064 ABS
ATO content	Conventional	ATO Free solution
LDR* for Standard UL 94 V0 (1.6mm)	24-26%	31-34%
LDR* for ATO final concentration <1%	< 7.8%	100%



PE Applications (Films, Pipes, Multiwalls, Foams, Solid Sheets)

	Standard product	New product
Product	FR 07180 LD	FR 07180A LD
ATO content	Conventional	Reduced ATO
LDR* for Standard DIN 4102 B2 (150 micron)	4%	4.5%
LDR* for ATO final concentration <1%	< 6.7%	< 10.5%



PP Pipes

	Standard product	New product	New product
Product	FR 0D200 LL	FR 0D600 LD	FR 0D500 LD
ATO content	Conventional	Reduced ATO	ATO Free solution
LDR* for Standard UL 94 V2 (1.6mm)	3.5%	3.5%	3.5%
LDR* for ATO final concentration <1%	< 9.6%	< 14.5%	100%



PP Foams

	Standard product	New product
Product	FR 00244A PP	FR 00244B PP
ATO content	Conventional	Reduced ATO
LDR* for Standard UL 94 V2 (1.6mm)	3.50%	3.50%
LDR* for no Carcinogenic Cat 2 classification	< 6.3%	< 9.3%



*LDR - Let Down Ratio

For more information:

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