



# FACTSHEET

## ANTIMONY TRIOXIDE

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### Summary profile

Antimony is a metal naturally found in the earth's crust. The manufacture of antimony trioxide (ATO) involves a reaction of antimony metal with oxygen that results in the formation of a white crystalline powder of a ceramic character. Total worldwide volume of ATO production was 123.000 tons in 2006.

### Applications

ATO provides unique properties not easily obtained through other products when applied in a variety of industrial processes:

- **Increasing Fire Resistance of Materials:** Ensuring high levels of fire safety for the individual citizen in their home as well as in public places such as cinemas, underground trains and airplanes, has led to international safety standards requiring inherently flammable materials to be treated with flame retardant chemicals. ATO greatly increases flame retardant effectiveness when used as a synergist in combination with halogenated flame retardants in plastics, paints, adhesives, sealants, rubber and textile back coatings.



ATO ensures a high level of resource efficiency and compliance with stringent fire safety standards. For example, it enables the use of certain plastics in consumer products such as computer housings and TV sets that might otherwise pose a great fire hazard. .

- **The Leading Catalyst for Manufacture PET Plastics:** ATO is the major catalyst for the production of PET plastic used in the packaging of mineral water and soft drinks. PET is one of the best materials for plastic bottles, with a history of safe use by millions of consumers every day. ATO's safety in the production of PET bottles has been confirmed by the World Health Organisation (2003) and the European Food Safety Authority (2004). The use of ATO as a catalyst in PET bottles does NOT impact the safety of the beverages.



- as a clarifying aid in certain *glasses*,
- as a coating used on certain grades of *TiO2 pigments*,
- as a component in the manufacturing of *complex inorganic coloured rutile pigments* and
- as an opacifier *in cast iron bath* and *sinking enamelling*.



International  
**ANTIMONY  
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## **Regulatory Compliance and Science**

Antimony trioxide is able to be traded without restriction for any application in any EU country. ATO is classified in the EU as Xn: Harmful and R40 (Limited evidence of a carcinogen effect) and at international level as a possible carcinogen. However, the same EU and international rules recognise that such labelling is based on the potential "health hazards" associated with a fine powder, not the practical "health risks". Even though there is very little "carcinogenic risk" associated with the exposure to ATO at present occupational exposure limits, a "potential hazard" has been identified at very high inhalation exposures.

ATO has been extensively tested as to its compatibility for the environment and human health. Recent studies provide conclusive evidence that ATO is neither a sensitiser, nor an eye or respiratory tract irritant. Human data confirm that ATO is irritating to human skin but is not considered poisonous via oral ingestion. Considering the results of a new study, independent scientists are convinced that ATO is not a mutagen. ATO is not harmful to aquatic organisms and environmental impact is expected to be low with normal handling and use. There is no evidence that antimony is accumulating in the food chain due to industrial activities associated with the manufacture or use of antimony trioxide.

Such scientific test results are in the course of being incorporated into the ongoing EU risk assessment process, which is widely recognised as the most comprehensive scientific assessment of chemical substances today. The EU risk assessment for ATO is due for completion at the end of 2007. As such, ATO is well placed to meet the requirements of the new EU chemicals legislation, REACH. All the scientific data gathered under the Risk Assessment will be transferred to a REACH dossier and will enable industry partners to (pre-) register ATO at the appropriate time.

In view of ATO's intrinsic properties, regulatory agencies have established safety limits for the purposes of environmental, worker and consumer protection. ATO can be applied without restriction meeting fully these safety limits. To further minimise and eliminate dust formation, hygienic grades -which include damped or wetted, pasted, granular and polymer bound masterbatch grades- are more and more common practice.

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## **National and International actions**

Antimony oxide is excluded from some eco-labels (some Blue Angel and EU Flower eco-labels) because of its R40-phrase or Class 3 carcinogen classification. Some eco-labels also limit concentrations of "extractable" antimony in certain materials (e.g. 260 ppm antimony in PET fibres, which equals 310 ppm antimony trioxide).

Some Nordic countries are promoting the use of antimony-free products, but antimony trioxide is not banned in any country at this moment.

Antimony requires declaration in some of the Materials Declaration Guides produced or being developed in the automotive and electronics and electrical sector, for example by certain manufacturers and by the Global Automotive Declarable Substance List (GADSL).

### **For further information**

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- CAS-No. 1309-64-4
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