



TECHNICAL DATA SHEET

CATALYST S-21[®]

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High-Performance, High-Quality, Perform Catalyst for PET Synthesis

- Minimum 4.8% solubility in monoethylene glycol (MEG) at 20 °C; increases to 12.5% minimum at 60 °C.
- Improved polycondensation time, especially in continuous processes.
- Lower antimony usage than traditional antimony oxide.
- Filter pack and in-line oligomer/polymer filter life substantially improved.
- Consistent, high purity catalyst.
- Non-dusting catalyst process-friendly.
- Minimizes reduction of antimony(III) to antimony metal.
- Rapid incorporation into the monomer/growing polymer chain.

Characteristics

Formula	Sb(CH ₃ COO) ₃
Appearance	White to off-white crystalline solid
Odor	Odor of acetic acid
Hydrolytic Stability	Decomposes in the presence of moisture to antimony oxide and acetic acid
Bulk Density	1.2 kg/liter
Minimum Solubility in Anhydrous MEG	4.8% at 20 °C 12.5% at 60 °C
CAS No.	6923-52-0
DOT No.	UN 3077

Typical Analysis

% Antimony	40.8
Sulfate (ppm)	10
Chloride (ppm)	<20
Pb (ppm)	15
Fe (ppm)	5
Cu (ppm)	2
Na (ppm)	10
Mg (ppm)	2

Benefits Summary

- Catalyst S-21[®] is a low trace metal, high purity catalyst used in the manufacture of PET.
- Catalyst S-21[®] has excellent solubility in ethylene glycol, forming a solution that remains stable for an extended period of time in the absence of air.
- Catalyst S-21[®] has catalyst solution consistency due to the formation of a single species.
- Catalyst S-21[®] is incorporated rapidly into the monomer/growing polymer chain, which allows catalyst make-up time to be shorter and process to operate at lower temperatures.
- Minimal losses of antimony to the ethylene glycol recycle.

Recommendations for use

- Catalyst solution should be formulated at approximately 2-wt% Sb with virgin MEG (with water content less than 0.05%) at 60 °C.
- In the polyester process Catalyst S-21[®] solution is typically added at the esterification stage. It should be noted that Catalyst S-21[®] is a very versatile catalyst and other addition points may be used. (Consult our Technical Service group for more details).
- As practiced with all antimony catalysts, do not add phosphorous-containing antioxidants concurrently with Catalyst S-21[®]. The presence of organophosphorous compounds can reduce antimony(III) to antimony metal. This will reduce both the effectiveness of the catalyst and create grayness in the polymer. Ideally, the phosphorous antioxidants are not required and should not be used.
- Catalyst concentration varies according to end use of the polymer. A typical recommendation would be 160-250 ppm as antimony based on total weight of PET.
- One year shelf life is recommended for Catalyst S-21[®].



Packaging

Catalyst S-21[®] is provided in 15 KG high-density polyethylene (HDPE) pails. Pallets are packed with 48 pails with an over-pack for protection during shipment. Packaging conforms to UN 1H2/Y23/S/USA.

A special tool to open the pail is available from Matrix Inc.

Environmental information

Catalyst S-21[®] is a corrosive solid that causes eye and skin burns, if contacted. It hydrolyzes in water and decomposes, yielding antimony oxide and acetic acid. Release of the material to open water may be hazardous to aquatic life. In the case of spill or release, stop the leak, if possible. Ventilate the space involved. Contain, sweep up, and place in container for disposal. Shut off or remove all ignition sources. Prevent waterway contamination. Construct a dike to prevent spreading. Collect run-off and transfer to drums or tanks for later disposal.

Safety and Industrial Hygiene

Contact with Catalyst S-21[®] causes eye and skin burns and may cause blindness. Excessive exposure to dust may cause respiratory tract irritation. Contains antimony, which causes lung, heart, liver, kidney, and spleen damage if swallowed. Do not get in eyes, on skin or on clothing. Avoid breathing dust, and wash thoroughly after handling. Protective clothing and goggles are recommended to prevent eye and skin irritation. Use only with adequate ventilation. Avoid creating dust in handling, transfer or clean-up. Workers should be provided with a NIOSH-approved respirator if ventilation is inadequate.

Suggested First Aid

If product comes in contact with eyes or skin, immediately flush with water for at least 15 minutes, while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

If product is inhaled, remove individual to fresh air. If breathing is difficult, get medical attention.

If product is swallowed, do NOT induce vomiting. Give water to drink. Get medical attention immediately. Never give anything by mouth to an unconscious person.

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