

TO: J. L. Martin
XF: Alumina

TO: Robert Martin

FROM: T. G. Grumbles

DATE: May 26, 1987

Interoffice
Communication

SUBJ: EXPERIMENTAL ALUMINA PRODUCTS: MSDS AND LABEL WARNINGS

VISTA

As we have discussed, based on the physical properties of our new Aluminas, additional warning language regarding the inhalation hazards of these products is recommended for the MSDS's and sample labels.

In general, the small particle size aluminas are more respirable. They still would be considered non-toxic nuisance dust but additional warning emphasizing the need to avoid inhalation should be used. The recently issued "Small Particle Size Experimental Aluminas" Technical Data Sheet reflected this issue. The following should be done for R&D samples of the small particle size aluminas:

A. Material Safety Data Sheet Modifications

1. On the MSDS add the following statement under "Nature of Hazard - Inhalation" in Section 5: "Due to the small particle size of this alumina, precautions should be taken to avoid inhalation of dust during handling."
2. Under "Toxicity Data" add the following statement: "Testing done on similar material with a larger average particle size."
3. Under Section 8, Ventilation Requirements add the following: "Local exhaust ventilation may be required for some operations to assure adequate control."
4. Under Section 8 Respiratory Protection, add: "with high efficiency filters"

A copy of the affected MSDS portions with numbers corresponding to the changes is attached.

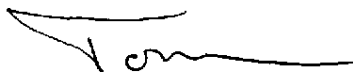
- B. Sample Label Modifications: The labels for sample containers should include the following: "Respirable nuisance dust. Due to the small particle size, precautions should be taken to avoid inhalation of dust during handling."

The Vista Toxicology Assessment Committee will be reviewing the potential health effects and possible testing needs of these new aluminas, specifically whiskers, in the near future. For now the

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experimental aluminas should be distributed with the amended
information discussed above.



T. G. Grumbles

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Attachment

cc Carl Kerfoot
Allen Nielsen
Duane Lewis
Mike Sweet

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5. HEALTH HAZARD INFORMATION

FIRST AID

EYES: Flush with large amounts of water for at least 15 minutes. If irritation occurs, seek medical aid.

SKIN: Flush with water.

INHALATION: If exposed to excessive amounts, remove to fresh air.

INGESTION: Seek medical advice.

NATURE OF HAZARD

EYES: May cause physical irritation if exposed to large amounts of dust.

SKIN: No hazard under normal circumstance.

INHALATION: May cause physical irritation to upper respiratory tract. This material is a nuisance dust and as such does not produce significant organic disease or toxic effect with reasonable exposures. (1)

INGESTION: No hazard under normal circumstances.

EFFECTS OF OVEREXPOSURE:

ACUTE OVEREXPOSURE: Physical irritation.

CHRONIC OVEREXPOSURE: Physical irritation. No known long-term toxic effects.

THRESHOLD LIMIT VALUE (TLV)

Vista recommends this material be treated as a nuisance dust.
1985-86 ACGIH TLV: 10 mg/m³ of total dust and 5 mg/m³ respirable dust.
OSHA PEL: 15 mg/m³ of total dust and 5 mg/m³ respirable dust.

TOXICITY DATA (2)

SKIN CONTACT: Rabbit skin LD₅₀: 4 g/Kg
Rabbit skin irritation index: 0.2 (max. score possible is 8.0)

EYE CONTACT: Rabbit eye irritation index: 6 (max. score possible is 110)

INHALATION: Rats survived exposure to a concentration of 83 mg/l for one hour.

INGESTION: Acute oral LD₅₀ in rats: 20 g/kg

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SPECIAL PRECAUTIONS: AVOID INHALATION

6. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Stable and non-volatile material.

INCOMPATIBILITY

Not applicable.

HAZARDOUS DECOMPOSITION PRODUCTS

Not applicable.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

Not applicable.

7. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Material should be picked up mechanically and placed in drums, bins, or other appropriate containers.

NEUTRALIZING CHEMICALS

Not applicable.

WASTE DISPOSAL METHOD

May be disposed of in a landfill according to local, state and federal regulations.

8. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS

Mechanical ventilation should be used to control dust levels below the PEL and TLV.

(3)

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY (SPECIFY IN DETAIL):

NIOSH approved air-purifying dust respirator / (4)

EYE:

Chemical goggles.

GLOVES:

Not needed.

OTHER CLOTHING AND EQUIPMENT:

Not needed.

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Vista Chemical Company is involved in research on developing experimental aluminas having average particle sizes less than one micron. These aluminas have a high metallic purity and can be produced to crystal structures of amorphous, boehmite, gamma, delta and alpha.

CATAPAL® XJ Alumina

This product is a small crystallite sized boehmite alumina. It is available as a dried powder consisting of highly friable aggregates with a primary particle size of approximately 0.5 microns diameter. This product could also be supplied in slurry form (aqueous or organic carrier). Specific properties of the powder are listed below.

CATAPAL XMS Alumina

This product is an amorphous alumina composed of spherical particles generally smaller than one micron. Upon calcination, the material undergoes phase transformations typical of boehmite type alumina (gamma, delta, theta, alpha). Very limited quantities have been produced and samples are available only upon special request. Properties are listed below.

CATAPAL XO Alumina

This product is a high purity delta alumina composed of spherical particles averaging approximately 0.3 microns in diameter. It is available currently in powder or slurry form. Gamma crystalline phase material can be produced upon special request. Properties are listed below.

Composition and Physical Properties*	CATAPAL XJ		CATAPAL XMS		CATAPAL XO	
Al ₂ O ₃ Content (wt. %)	72		80		97.5	
H ₂ O Content (Free) (wt. %)	0		5		1.0	
(Bound) (wt. %)	18		10		1.0	
Carbon Content (wt. %)	10		5		0.5	
Crystal Phase	Boehmite		Amorphous		Delta	
Crystal Size (Angstroms)	020	021	—	—	—	—
	28	40	—	—	—	—
Metal Impurities (ppm)						
TiO ₂	100		100		100	
Fe ₂ O ₃	100		100		100	
SiO ₂	250		250		250	
Na ₂ O	100		100		100	
Particle Size (microns)	0.35		0.2		0.3	
Surface Area ¹ (m ² /g)						
As is	—		—		15-65	
500° C	450		—		—	
1000° C	—		45		—	
1400° C	6.8		—		—	
Bulk Density (g/cc) (Loose)	0.141		—		0.10	
(Packed)	0.196		—		0.14	

*These properties are based on pilot plant studies and may vary upon commercialization.

¹Calcined for one hour at temperatures shown.

Availability:

CATAPAL small particle aluminas are available in gram quantities.

Safety and Handling:

CATAPAL aluminas are non-toxic materials and would be classified as nuisance dust. Due to the extremely small particle size of these aluminas, precautions should be taken to avoid inhalation of any dust during handling or shipping.

THE DATA CONTAINED HEREIN ARE FOR GENERAL INFORMATION PURPOSES ONLY. PLEASE REFER TO THE VISTA CHEMICAL COMPANY MATERIAL SAFETY DATA SHEET FOR SPECIFIC, COMPLETE INFORMATION REGARDING THIS PRODUCT.

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VISTA

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