

Product Safety Summary

Ultramid® red phosphorous containing flame retarded grades

This Product Safety Summary is intended to provide a general overview of this group of products, their use, potential hazards, exposure and how to manage any risk. The information on the Summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found on the Material Safety Data Sheet (MSDS) for the specific product of interest.

Chemical Identity

Abbreviation: None

CAS Number: 7723-14-0 (Phosphorus – Red Phosphorus is one form of the element Phosphorus)

Common Names: The following list is examples of BASF products using red phosphorus

Ultramid® A3X2G5
Ultramid® A3X2G7
Ultramid® A3X2G10
Ultramid® A3XZG5
Ultramid® T KR 4365 G5
Ultramid® 66 H2 G/25-VO KB1
Ultramid® 68 H2 - VOH

Product Overview

- Ultramid® red phosphorus containing products are engineering thermoplastics used in applications that require outstanding flame retardant performance. They are typically used in electronics applications.
- They are sold as a small plastic pellet and used by product manufacturers to injection mold plastic parts. They are typically either red or black in color.
- Example applications include fuse boxes and electrical connectors.
- When this product is heated to high temperatures in order to produce a molded part, small amounts of phosphine gas may be given off. The release of phosphine gas during the manufacture of parts made from Ultramid® red phosphorus containing products is the primary health concern from this product. Exposure to phosphine gas can cause irritation to the nose, throat and lungs. It may also cause headaches, nausea, abdominal pain, vomiting and diarrhea. Long term exposures may cause kidney or liver damage.
- Plastic parts made from Ultramid® red phosphorus containing products do not present a risk to end users.
- The Occupational Safety and Health Administration Permissible Exposure Limit (PEL) for phosphine is 0.3 ppm as an 8 hour time weighted average. The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for phosphine is 0.3 ppm as an 8 hour time weighted average and 1 ppm as a 15 minute short term exposure level.
- For further safety and health information, refer to the current Material Safety Data Sheet (MSDS) for Ultramid® red phosphorus containing products (See the link at the end of this Product Safety Summary)

Physical/Chemical Properties

- The products are sold as solid plastic pellets. They are typically either reddish or black colored.
- Ultramid® red phosphorus containing products typically have melting points above 200°C. Since these products are flame retarded, they will not readily burn.
- These products typically have a slight odor, normally described as garlic like or fish like. This odor may particularly be noticed when a box of pellets are first opened. Odor does not provide an adequate warning for exposure to Phosphine.

Health Information

Acute Hazards

Ultramid® red phosphorus containing products themselves are not hazardous. During melting in order to extrude or mold plastic parts phosphine gas can be formed. Phosphine gas is irritating to the nose, mouth, throat and lungs.

Exposure to phosphine gas can cause headache, nausea, abdominal pain, vomiting and diarrhea.

Effects on Respiratory System:

Exposures to phosphine vapors can cause damage to the lungs.

Effects on Eyes:

Phosphine vapor can cause eye irritation. Some dust can form when processing plastic pellets. This dust can irritate the eyes in the same manner that any dust may.

Effects on Skin:

Phosphine vapor is not known to cause irritation or any effects to the skin. The melted plastic from processing these products will cause burns if exposed to skin.

Effects on Ingestion:

There are no known effects from accidental ingestion of these products.

Chronic Hazards

Long term overexposure to phosphine vapors may cause liver and kidney damage.

Sensitization

These products are not known to cause sensitization.

Environmental Information

These products are not known to cause any harm to the environment.

These products may be disposed of in accordance with national, state and local regulations. The product is generally considered non-hazardous waste and can be disposed of in most municipal waste.

Additional Hazard Information

Ultramid® red phosphorus containing products may produce small flare ups of fire during extruding and molding. This typically occurs when the material is being purged, or the barrel of the tool is pulled back from the mold. It is believed to be caused from small pockets of Phosphine being released to the air and self-igniting. Since the product is flame retarded, these small flame ups should not present a further fire risk.

The following safety recommendations must be observed:

- Ensure adequate drying to the recommended moisture levels when using these products to produce molded plastic parts. Moisture is a key contributor to the formation of Phosphine.
- Keep all temperatures at the lower end of the recommended range for processing.
- Purge melt paddies produced during molding processes should be placed into water buckets in order to cool them and avoid formation of Phosphine.
- Open bags of pellets may emit Phosphine so they should be stored in a ventilated area away from the work area.
- Grinding of newly produced parts may emit Phosphine. Ventilation should be provided, along with other personal protective equipment appropriate for the grinding operation.
- Provide good ventilation of the machine and all work areas. Maintain adequate ventilation in all work areas to control to the ACGIH TLVs/OSHA PELs.

Exposure Potential

Exposure to phosphine vapors can occur to production employees using this product. Small amounts of phosphine may be trapped in the headspace of bags or boxes of Ultramid® red phosphorus containing products. Exposures are very low as long as the product is processed under appropriate temperature and pressure conditions, moistures are kept low and appropriate ventilation is provided. Employees should be well trained in the use of this product.

Consumers who are using the plastics articles produced from Ultramid® red phosphorus containing products should not be exposed to phosphine vapors since the material has already cooled and completely cured.

If parts made from these materials are burned in a fire phosphine as well as other products of combustion, such as carbon monoxide may be given off.

Risk Management

Workers handling Ultramid® red phosphorus containing products can safely work with this material if adequately instructed and educated regarding proper handling procedures.

As long as the appropriate processing conditions are used during molding and extruding and ventilation is provided at the extruder and mold, the level of phosphine should be maintained at very low levels and the risk for any health effects should be very low.

Workers should be carefully trained to understand the risk and effects of phosphine exposure. An person who is experiencing signs of phosphine exposure should be taken for medical treatment and observed. Appropriate emergency procedures must be in place including a process for emergency shut down of equipment and emergency evacuation of employees should the material be improperly processed such that extreme degradation occurs releasing significant phosphine vapors.

Phosphine odor should not be used as a warning sign. The odor threshold will vary between individuals and symptoms may occur below the odor threshold.

Consumers using products made from Ultramid® red phosphorus containing products are not at risk to health effects.

Federal/Science Findings

U.S. Occupational Safety and Health Administration (OSHA)

http://www.osha.gov/dts/chemicalsampling/data/CH_262400.html

American Conference of Governmental Industrial Hygienists (ACGIH)

<http://www.acgih.org>

National Institute for Occupational Safety and Health (NIOSH)

<http://www.cdc.gov/niosh/topics/phosphine/>

Agency for Toxic Substances and Disease Registry (ASTDR)

<http://www.atsdr.cdc.gov/MHMI/mmg177.html>

<http://www.atsdr.cdc.gov/tfacts177.html>

Organization for Economic Cooperation and Development (OECD)

A SIDS Dossier has not been developed for Phosphine.

Contact Information

<http://www.basf.com>

MSDS

<http://worldaccount.basf.com/wa/PublicMSDS/Search>

References

BASF Ultramid Product Brochure:

<http://www2.basf.us//PLASTICSWEB/displayanyfile?id=0901a5e18018060f>

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