

## References and acknowledgements

- African Explosives Limited
- BME (Pty) Ltd
- Tanker Talk, GRW Engineering (Pty) Ltd, November 2010.
- Guidance for the storage of hot ammonium nitrate solutions, European Fertiliser Manufacturers' Association, 2005.
- International Programme on Chemical Safety, United Nations. 35

RIGHT Emulsion tanker



## General description

Ammonium nitrate emulsion, suspension or gel is ammonium nitrate (AN) suspended in a liquid. The material itself does not readily burn but will readily do so if contaminated by combustible material. It will accelerate the burning of combustible material. Toxic oxides of nitrogen are produced during combustion of this material. It is used as a fertiliser, as a freezing mixture, in safety explosives, matches and pyrotechnics.

- **Physical properties:** White to gray to brown, odourless beads, pellets or flakes.
- **Melting point:** 169°C, decomposes at 210°C.
- **Specific gravity:** 1.72
- **Solubility in water:** soluble

## Hazards

- **Hazard classification:** Class 5.1.
- **Reactivity alerts:** Explosive, strong oxidising agent.
- **Air and water reactions:** No rapid reaction with air; no rapid reaction with water.
- **Fire hazard:** These substances will accelerate burning when involved in a fire. Some may decompose explosively when heated or involved in a fire. May explode from heat or contamination. Some will react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, oil, clothing, etc.). Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2008).
- **Health hazards:** Inhalation, ingestion or contact (skin, eyes) with vapours. It may cause severe injury, burns or death. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. (ERG, 2008).
- **Reactivity profile:** AN is a strong oxidising agent. Intimate contact with combustible materials creates a fire or explosion hazard. Closed containers may rupture violently or detonate if heated. May detonate

if subjected to strong shocks, such as from an explosion. AN of any grade, including fertiliser grade, should be considered an explosive capable of detonation by the combustion or explosion of adjacent materials, especially when mixed with oil, charcoal, or other organic materials. Emits oxides of nitrogen and ammonia when heated to decomposition.

## Response recommendations

- **Fire-fighting:** Flood with water. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. (AAR, 2003)
- **Non-fire response:** Keep sparks, flames and other sources of ignition away. Keep material out of water sources and sewers. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Cover solids with a plastic sheet to prevent dissolving in rain or fire-fighting water. Dike surface flow using soil, sand bags, foamed polyurethane or foamed concrete. Water spill: Use natural barriers or oil spill control booms to limit spill travel. Use natural deep water pockets, excavated lagoons or sand bag barriers to trap material at bottom. Remove trapped material with suction hoses. (AAR, 2003).
- **Protective clothing:** Wear appropriate chemical protective gloves, boots and goggles. Do not handle broken packages unless wearing appropriate personal protective equipment. Wash away any material which may have had contact with the body with copious amounts of water or soap and water. Wear positive pressure, self-contained breathing apparatus when fighting fires involving this material. Approach fire with caution. (AAR, 2003).
- **First aid:** Move victim to fresh air and call emergency medical services. Remove and isolate contaminated clothing and shoes at the site. In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes. (AAR, 2003).