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CHEMICALS GROUP

MATERIAL SAFETY DATA SHEET

SECTION 1: MATERIAL IDENTIFICATION AND USE	
Material Name	Ammonium lignosulfonate liquid
Manufacturer	Tembec Inc. - Chemicals Group
Address	33 Kipawa Road, Temiscaming, Quebec, Canada J0Z 3R0
Telephone	(819) 627-4322, (819) 627-3200 in case of emergency
Supplier	Tembec Inc. - Chemicals Group
Chemical Name	Ammonium lignosulfonate
Product Codes	Superbind™, TDS, ARBO™ A02, ARBO™ A05, Heavy Liquor, ARBO™ AM
CAS Registry no.	66071-92-9
Chemical Family	Spent sulfite liquors and cooking liquors
Chemical Formula	Not applicable, Polymer
Molecular Weight	Not applicable, Polymer
Material use	Binder, pelletizing agent, briquetting agent, macronutrients, surfactant, dust suppressant.
NFPA Ratings	Health; 0, material which on exposure would offer little or no risks. Flammability; 0, material that does not burn. Reactivity; 0, material which is normally stable even under fire exposure conditions and which is not reactive with water.
Classification	No restrictions.

SECTION 2: HAZARDOUS INGREDIENTS

Contains no hazardous ingredients

SECTION 3: PHYSICAL DATA FOR MATERIAL

Physical state	Liquid
Appearance and odour	Viscous brown/black liquid with light odour.
Odour threshold	Not available.
Vapour Pressure	Aqueous solution, like that of water.
Evaporation Rate	Aqueous solution, like that of water.
% Volatile by weight	47-51, evaporation water, heating at 105°C.
Boiling point	105°C



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Freezing point	-5°C
Specific gravity, 25°C	1.21-1.26
pH @ 25°C	4.0-6.0 as is, (S-002: 6.5-7.5)
Solubility in water	Completely at 20°C
Coefficient of oil/water distribution	Not applicable, completely in water.

SECTION 4: FIRE AND EXPLOSION DATA

Flammability	No, not flammable
Means of extinction	Not applicable
Special procedures	None
Flash point	Not applicable
Upper explosion limit, % by volume	Not applicable
Lower explosion limit, % by volume	Not applicable
Auto ignition temperature	Not applicable
Hazardous combustion products	Sulfur Dioxide, Carbon Oxide (CO ₂ , CO), Nitrogen Oxides (NO _x)
Explosion data	Not applicable
Rate of burning	Not applicable
Explosive power	Not applicable
Sensitivity to static discharge	Not applicable

SECTION 5: REACTIVITY DATA

Stability	Normally stable, stable below 200°C.
Hazardous Polymerization	Will not occur
Incompatibility	Strong oxidizing agents, concentrated acids, Nitric acid. Avoid contact with these materials.
Conditions to avoid	Contact with above materials. Heating material to dryness and further to 200°C. Contact with strong base.
Hazardous Decomposition products	Sulfur dioxide (SO ₂), carbon oxides (CO ₂ , CO), Nitrogen Oxides (NO _x). Ammonia may be released if strong alkali is applied.



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SECTION 6: HEALTH HAZARD INFORMATION

Inhalation	Not applicable
Skin contact	Prolonged contact may cause light skin irritation in sensitive individuals.
Eye contact	Avoid. Any foreign material in the eyes can cause irritation.
Ingestion	None
Toxicity	LD50, Toxicological studies on lignosulfonates indicate that they are non toxic. During rat tests to determine toxicity where lignosulfonates were administered orally, no deaths were produced.
In the literature, LD50 for lignosulfonates has been reported to be 20,000 mg/kg body weight by ingestion. Materials with LD50 values of 5,000 mg/kg of body weight and greater are considered to be non toxic.	
Carcinogenicity	None
Mutagenicity	None
Reproductive effects	None
Synergistic substances	None
Sensitization effects	None
Irritation	Practically none

SECTION 7: PREVENTATIVE MEASURES

<u>Spill and leak procedures</u>	
Small spills, flush with water; large spills, dyke and reclaim the product.	
<u>Waste disposal</u>	
Dispose of according to local, provincial, state, and federal regulations.	
<u>Personal protective equipment</u>	
Gloves recommended for prolonged exposure. Safety glasses or goggles required to prevent eye contact. Other - work clothes should be changes on a daily basis.	
Engineering controls	No special precautions.
Handling procedures and equipment	No special precautions.
Storage	No special precautions.
Special shipping information	None



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SECTION 8: FIRST AID MEASURES	
Eye contact	Flush eyes with luke warm flowing water, holding eyelids open, for at least 20 minutes. Contact physician if irritation persists.
Skin contact	Wash with flowing water.
Inhalation	Not applicable.
Ingestion	Drink large amounts of water. Do not induce vomiting. Do not give water to unconscious person. Contact a physician if irritation persists.

SECTION 9: PREPARATION INFORMATION AND DATE	
Prepared by:	Technical Staff, Chemicals Group
Approved by:	Technical Staff
Date approved:	July 5, 2004
Sources of information: Government regulations, recognized safety practices, technical experience and knowledge of the product, and general literature.	
The data and information contained herein is believed to be true to best of our knowledge at Chemicals Group. No warranty or representation for which Chemicals Group assumes legal responsibility is implied. The information refers only to the controlled product described herein and does not relate to use of the product with any other materials and processes. Chemicals Group encourages our customers to consider, investigate, and verify information for their uses. Chemicals Group assumes no responsibility for damage to property or equipment or injury to recipient or third party persons as a result of misuse or handling of this quality product. Customers are encouraged to conduct appropriate testing before use of product. The user must assure that use of information contained herein is done according to all applicable laws and regulations.	

SECTION 10: ADDITIONAL INFORMATION	
For many years, toxicological studies have demonstrated the non toxic, non hazardous nature of lignosulfonates. Lignosulfonates were always found to be non toxic.	
Use of lignosulfonates in animal feed and other food related applications is approved by the US FDA and Agriculture Canada. Use as a pelleting aid for animal feed, in boiler water treatment, sealing gaskets for food containers, etc. is indicated in Title 21 of the code of regulations of the US FDA. Use of lignosulfonate for pelletizing animal feed is permitted by Agriculture Canada in the Feeds Act and Feeds Regulations.	
Safe use history of lignosulfonates, government regulations that permit use of lignosulfonates in animal feeds, and toxilogical studies have all demonstrated that lignosulfonates are safe, non toxic, non hazardous products.	