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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

Sub-Committee of Experts on the Transport of Dangerous Goods
(Twenty-first session, 1-10 July 2002, agenda item 8(c))

LISTING AND CLASSIFICATION

Miscellaneous amendment proposals (Parts 2 and 3)

New entry for calcium cyanide containing calcium carbide

Transmitted by the expert from South Africa

AeroBrand cyanide, sometimes known as "black cyanide" is manufactured via the cyanide process. As a consequence, the product contains a residual quantity of 2-3% calcium carbide.
This residual calcium carbide reacts with water to form acetylene that, at a critical point, is both flammable and forms explosive gas mixtures.

Several thousand tons of the product is manufactured and transported annually to be used as a gold leaching agent.

At present this calcium cyanide brand is transported under UN 3134. However, it is not regarded as ideal as cyanide as a product has enormously emotive associations and there could be a perception that the adoption of UN 3134 could cloud the association.

Proposal

To add the following new entry for calcium cyanide, containing calcium carbide, to the dangerous goods list:

UN No. : XXXX
Proper shipping name: CALCIUM CYANIDE with more than 0,1% calcium carbide
Classification : Division 4.3
Subsidiary risk : 6.1
Packing group : I
Packing instructions : P403, IBC04
Special provision : B1

Figure 1

DATA SHEET TO BE SUBMITTED TO UNITED NATIONS FOR NEW OR AMENDED CLASSIFICATION OF SUBSTANCE

Submitted by : Date : 03 April 2002

Supply all relevant information including sources of basis classification data. Data should relate to the product in the form to be transported. State test method. Answer all questions – if necessary state "not known" or not applicable" – if data is not available in the form requested, provide what is available with details. Delete in appropriate words.

Section 1 SUBSTANCE IDENTITY

1.1 Chemical name: Calcium Cyanide Solid

1.2 Chemical formula: $Ca(CN)_2$

1.3 Other names/synonyms: Black Cyanide/Aero®Brand Cyanide

1.4
1.4.1 UN number: XXXX 14.2 CAS number: 592-01-8

1.5 Proposed classification for the Recommendations

1.5.1	Proper shipping name (3.1.2*)	CALCIUM CYANIDE with more than 0,1% calcium carbide.		
1.5.2	class/division	4.3	subsidiary risk(s)	6.1
	Packing group	I		
1.5.3	proposed special provisions, if any	B1		
1.5.4	proposed packing instruction(s)	P403 and IBC04		

Section 2 PHYSICALS PROPERTIES

2.1 Melting point or range: +/-640 °C (by extrapolation as product decomposes)

2.2 Boiling point or range: not applicable

2.3 Relative density at :

2.3.1 15°C
2.3.2 20°C: 940 – 1000kg/m^3
2.3.3 50°C

2.4 Vapour pressure at : 13mm Hg @ 20° C.

2.4.1 50°C
2.4.2 65°C

2.5 Viscosity at 20°C** Not applicable

2.6 Solubility in water at 20°C Partially soluble

- This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods
- See definition of "liquid" in 1.2.1 of Model Regulations on the Transport of Dangerous Goods

2.7 Physical State at 20°C (2.2.1.1*) solid

2.8 Appearance at normal transport temperatures, including colour and odour
Steel grey - black, hard, brittle flakes. Odour dry: none, moist: acetylene.

2.9 Other relevant physicals properties
Flammable hydrogen cyanide gas is released in the presence of acids, acid salts and carbon dioxide. Flammable acetylene gas is evolved in the presence of moisture.

Section 3 FLAMMABILITY

3.1 Flammable vapour See 2.9

3.1.1 Flash point (2.3.3*) Not applicable
3.1.2 Is combustion sustained? (2.3.1.3) No.

3.2 Autoignition temperature Not applicable

3.3 Flammability range (LEL/UEL) Not applicable

3.4 Is the substance a flammable solid? (2.4.2*) No.

Section 4 CHEMICALS PROPERTIES

4.1 Does the substance require inhibition/stabilization or other treatment such as nitrogen blanket to prevent hazardous reactivity No
if yes, state

4.1.1 Inhibitor/stabilizer
4.1.2 Alternative method
4.1.3 Time effectiveness
4.1.4 Conditions rendering it ineffective

4.2 Is the substance an explosive according to paragraph 2.1.1.1 (2.1*) No

4.2.1 If yes, give details

4.3 Is the substance a desenitized explosive? (2.4.2.4*) No

4.3.1 If yes, give details

4.4 Is the substance a self-reactive substance? (2.4.1*) No
If yes, state

4.4.1 exit box of flow chart

What is the self accelerating decomposition temperature (SADT) for a 50-kg package
Not applicable

Is the temperature control required? (2.4.3.4*) No

- This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods

- See definition of “liquid” in 1.2.1 of Model Regulations on the Transport of Dangerous Goods

	4.4.2	proposed control temperature for a 50 kg package			°C
	4.4.3	proposed emergency temperature for a 50 kg package			°C
4.5	Is the substance pyrophoric? (2.4.3*)				No
	4.5.1	If yes, give details			
4.6	Is the substance liable to self-heating? (2.4.3)				No
	4.6.1	If yes, give details			
4.7	Is the substance an organic peroxide? (2.5.1*)				No.
	If yes, state				
	4.7.1	exit box of flow chart			
What is the self accelerating decomposition temperature (SADT) for a 50 kg package Not applicable					°C
Is temperature control required? (2.5.3.4.1*)					No
	4.7.2	proposed control temperature for a 50 kg package			°C
	4.7.3	proposed emergency temperature for a 50 kg package			°C
4.8	Does the substance in contact with water emit flammable gases?(2.4.4*) 4.8.1 If yes, give details. Flammable acetylene gas is evolved in the presence of moisture.				Yes
4.9	Does the substance have oxidizing properties? (2.5.1*)				No
	4.9.1	If yes, give details			
4.10	Corrosivity (2.8*) to : Not applicable.				
	4.10.1	mild steel	mm/year	at	°C
	4.10.2	aluminium	mm/year	at	°C
	4.10.3	other packaging material			
	(specify)		mm/year	at	°C
4.11	Other relevant chemical properties				

- This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods

Section 5 HARMFUL BIOLOGICAL EFFECTS

5.1	LD50. Oral (2.6.2.1.1*)	39mg/kg	Animal species	rat
5.2	LD50. Dermal (2.6.2.1.2)	mg/kg	Animal species	
5.3	LC50. Inhalation (2.6.2.1.3*)	ml/litre	Exposure time	hours
	or	ml/m^2	Animal species	
5.4	Saturated vapour concentration at 20oC (2.6.2.2.4.3*)			ml/m^2
5.5	Skin exposure (2.8*) results	Exposure time		hours/minutes
		Animal species		

5.6 Other data

5.7 Human experience

Section 6 SUPPLEMENTARY INFORMATION

6.1 Recommended emergency action

6.1.1 Fire (include suitable and unsuitable extinguishing agents)
Alkaline Dry Powder only - DO NOT use water or CO2 extinguishers.

6.1.2 Spillage
Small spill - Recover to sealed plastic or plastic lined containers for later disposal.

Large spill - Avoid dust generation, no naked flames or smoking in vicinity. Check spill for Hydrogen cyanide and/or acetylene evolution. Contain spillage to small area and keep dry. Recover spillage to plastic or plastic lined containers for disposal by qualified authority in appropriate manner.

Wet Spill - Complex spill with ferrous sulphate using lime to maintain pH at greater than 11. Absorb residues to sand or other non-combustible material; recover spillage to plastic or plastic lined containers for disposal by qualified authority in appropriate manner.

Environmental precautions
Do not allow product, runoff from incident or spillage control to enter sewers, drains or watercourses. Spillage or uncontrolled discharges into watercourses should be reported to the appropriate authorities.

6.2 Is it proposed to transport the substance in :

6.2.1	Intermediate Bulk Containers (6.5*)?	Yes
6.2.2	Portable tanks (6.7*)?	No

If yes, give details in section 7 and/or 8

Section 7 INTERMEDIATE BULK CONTAINERS (IBCs) (only complete if yes in 6.2.1)

7.1 Proposed type(s)
The proposed delivery unit would be a metal intermediate bulk container. The nominal weight of the product to be shipped in the IBC would be 1000 kg and transported in a standard 6-meter shipping container.

Section 8 MULTIMODAL TANK TRANSPORT (only complete if yes in 6.2.2)

8.1 Description of proposed tank (including IMO tank type if known)

8.2 Minimum test pressure

8.3 Minimum shell thickness

8.4 Details of bottom openings, if any

8.5 Pressure relief arrangement

8.6 Degree of filling

8.7 Unsuitable construction materials

- This and similar references are to chapters and paragraphs in the Model Regulations on the Transport of Dangerous Goods