
Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

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Sub-Committee of Experts on the Transport of Dangerous Goods

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Item 3 of the provisional agenda

Listing, classification and packing

Classification of strontium metal and subsidiary hazard corrosivity of alkali- and alkaline earth metals

Transmitted by the expert of Austria

1. A consignor of strontium metal used the classification criteria of the Orange Book and asked if UN 3208 or UN 3131 is the appropriate UN number.
2. The REACH dossier for strontium contains the property corrosivity.
3. Section 2.4.4 has no link to subsidiary hazards but 2.4.5, which is for organometallic substances only, has the footnote a:

^a If applicable and testing is relevant, taking into account reactivity properties, class 6.1 and 8 properties should be considered according to the precedence of hazard table 2.0.3.3.

4. UN 3131 WATER-REACTIVE SOLID, CORROSIVE, N.O.S. is not specifically addressed to organometallic substances and has only the SP223 (*"If the chemical or physical properties of a substance covered by this description are such that when tested it does not meet the established defining criteria for the class or division listed in Column 3 of the Dangerous Goods List of Chapter 3.2, or any other class or division, it is not subject to these Regulations"*) that is normally not assigned to n.o.s. entries.
5. Looking to substances with similar properties, there are several entries for class 4.3, where CLP regulation requires a corrosivity marking but UN entries have no subsidiary hazard assigned. As indicator for the similarity the Electronegativity (Pauling scale) is added for the Elements. The Electronegativity is a chemical property that describes the tendency of an atom to attract a shared pair of electrons towards itself (here: low value → high reactivity).

	UN No. (4.3)	CLP/REACH		Electronegativity as indicator for reactivity
		Contact with water	corrosivity	
Alkali metal				
Lithium	1415	H260	H314 (1B)	0,98
Sodium	1428	H260	H314 (1B)	0,93
Potassium	2257	H260	H314 (1B)	0,82
Rubidium	1423			0,82
Caesium	1407			0,79
Alkaline earth metal				
Calcium	1401	H261		1,00
Strontium	?	H260	H314 (1A)	0,95
Barium	1400	H260	H314 (1)	0,89
H260: In contact with water releases flammable gases which may ignite spontaneously				
H261: In contact with water releases flammable gases				
H314: Causes severe skin burns and eye damage				

6. It seems evident that substances that react vigorously with water will react with human tissue considering that our body contains 70 % water.
7. The very restrictive requirements for these substances show that the additional subsidiary hazard will have no influence on the transport conditions, except marking.
8. Considering 2.0.0.2 (substances listed by name in column 2 of the Dangerous Goods List in Chapter 3.2 meeting classification criteria for a hazard class or division that is not identified in the list) we believe that it is appropriate to inform the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods.
9. It should be discussed if the subsidiary hazard of corrosivity should be added to these named substances or not.
10. I think it would improve the transport safety when we add the warning that these substances are corrosive.