



Secretariat

Distr.  
GENERAL

ST/SG/AC.10/C.3/2004/42  
15 April 2004

ORIGINAL: ENGLISH

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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-fifth session, 5-14 July 2004  
Item 4 (a) of the provisional agenda

**PACKAGINGS**

Evaluation of the United Nations packaging requirements

Transport in bulk in freight containers

Provisions for the transport of solid substances in bulk containers - Rationalized approach

Transmitted by the International Council of Chemical Associations (ICCA)

**1. Background**

Provisions for the use of bulk containers for the transport of solid substances in bulk were included in a new chapter 4.3 of the thirteenth revised edition of the UN Model Regulations. At the same time two new bulk container codes (BK1 for transport in sheeted bulk containers and BK2 for transport in closed bulk containers) were added in column 6 of the Dangerous Goods List for some 25 UN entries.

These provisions were the result of a series of discussions, which started with document ST/SG/AC.10/C.3/1999/92 (Germany), followed by documents ST/SG/AC.10/C.3/2001/37 (United Kingdom and Germany) and ST/SG/AC.10/C.3/2002/29 (United Kingdom and Germany) (and UN/SCETDG/21/INF.66) before they were finally adopted in the 21st session in July 2002.

During these discussions, ICCA promised to present in the next biennium (2003-2004) a proposal for a rationalized approach for the assignment of bulk container codes to expand the number of substances involved (ST/SG/AC.10/C.3/40, para. 37).

The proposed approach is based on the previous documents on this issue, as well as on the rationalized approach for assignment of tank instructions for solids.

**2. Introduction**

In the previous biennium the Committee of Experts adopted a rationalized approach for the assignment of portable tank instructions for solids, based upon ST/SG/AC.10/C.3/2002/75 (United States of America).

GE.04-21578

ICCA is of the opinion that the list of solids that was used for the assignment of portable tank instructions in accordance with the “rationalized tank approach” (ST/SG/AC.10/29/Add. 1, pages 45-47) provides an appropriate basis for the assignment of bulk container codes.

ICCA is furthermore of the opinion that a number of solid substances, which are not yet identified by the rationalized tank approach but which have similar characteristics, should also be considered for the transport in bulk containers. This relates in particular to solids that are currently already permitted to be transported in RID/ADR tanks.

However, in view of the hazards of certain groups of products, a number of restrictions should apply and the following principles for the assignment of bulk container codes in column 10 of the Dangerous Goods List are put forward:

- No bulk container codes for:
  - solids of packing group I
  - solids of class 1 and of division 5.2
  - solid self-reactive substances or desensitised explosives of division 4.1
  - solids of packing group II of division 4.2
- BK2 (transport in closed bulk containers) for:
  - solids of PG II
  - corrosive and/or toxic solids (also substances of classes other than 6.1 and 8, with corrosive and/or toxic subsidiary risk)
- BK1 and BK2 (transport in sheeted and closed bulk containers) for:
  - all other solids

All substances, complying with the principles mentioned above, have been listed in the Annex to this document and have been grouped (and marked A, B, C, D, E, F), according to current provisions in the UN Model Regulations.

In the list in the Annex, reference is made to current or proposed provisions of:

- RID/ADR: in the heading of the different groups. For group B (new UN numbers) use is being made of document TRANS/WP.15/178 which contains the consolidated list of amendments submitted for entry into force on 1 January 2005. For the other groups, current provisions (edition 2003) have been taken into consideration.
- IMDG Code: any exception to the permission of the use of a UN portable tank, as recommended in the UN Model Regulations, has been marked with an \* with the explanatory note “\*: not permitted by IMDG Code”. Similar as for RID/ADR, use is being made of document MSC 78/3/4, which contains the proposed amendments to the IMDG Code.

Although it is up to the modal committees to accept the provisions recommended by the UN Model Regulations, it was thought useful to include these references.

Meaning of the letters used to identify the different groups:

- A : solid substances, listed in the rationalized tank approach, permitted in UN portable tanks and in RID/ADR tanks. Substances to which a bulk container code already has been assigned in the 13th revised edition of the UN Model Regulations, have been put in italics and have been underlined.
- B : solid substances, not listed in the rationalized tank approach, but permitted in UN portable tanks and in RID/ADR tanks. These comprise the “new” UN numbers that have been entered in the 13th

revised edition of the UN Model regulations: these UN numbers were not listed in the “rationalized tank approach” but have been allocated portable tank instructions in accordance with that approach;

C : solid substances, not permitted in UN portable tanks, but already permitted in bulk containers;

D : solid substances, not permitted in UN portable tanks but permitted in RID/ADR tanks;

E : solid substances, permitted in UN portable tanks but not in RID/ADR tanks ;

F : solid substances, not permitted in UN portable tanks and not permitted in RID/ADR tanks;

x : solid substances already permitted in bulk containers but for which the current assignment of bulk container codes conflicts with the proposed rationalized approach: BK1 and BK2 have been assigned but according to the proposed rationalized approach, only BK2 should be assigned.  
All the substances involved belong to group A or B.

Table summarising the criteria for grouping the substances  
(the last column reflects the allocation of bulk container codes as proposed in 3.1)

Group	Permitted in UN portable tanks	Permitted in RID/ADR tanks	Listed in the rationalized tank approach	Already permitted in bulk containers	Allocate bulk container codes as proposed in 3.1
A	Yes	Yes	Yes	Some	Yes (all)
B	Yes	Yes	No	No	Yes
C	No	Yes	No	Yes	Yes
D	No	Yes	No	No	Yes
E	Yes	No	No	No	Yes
F	No	No	No	No	No

### 3. Proposal

The following changes in Column 10 of the Dangerous Goods List in Chapter 3.2 are proposed:

1. Solids with UN numbers grouped under “A” or “B” or “D” or “E” should be permitted to be transported in bulk container by adding BK2 or BK1 & BK2 in column 10, in accordance with the proposed approach, as listed in the Annex. It is obvious that the UN numbers grouped under “C” should keep their currently assigned bulk container codes.

#### **UN numbers grouped under “F” should NOT be assigned any bulk container codes**

2. The allocation of bulk container codes to UN numbers marked with an “x” in Annex should be aligned to the proposed rationalized approach i.e. the bulk container code BK1 should be removed for these UN entries, keeping only BK2.

### 4. Justification

The solids that are proposed to be permitted for transport in bulk containers are already permitted for transport in either portable tanks or in RID/ADR tanks.

Taking into account that the provisions of the chapters 4.3 and 6.8 have to be complied with, ICCA is of the opinion that the proposed amendments will result in the same level of safety as the transport in tanks.

\* \* \* \* \*

**Annex (in English only)**

List of all substances, meeting the criteria explained in “2. Introduction” i.e. all solids except

- solids of packing group I;
- solids of class 1 and of division 5.2;
- solid self-reactive substances or desensitised explosives of division 4.1;
- solids of packing group II of division 4.2;

Class/ Div.	Relevant Sub. risk	PG	Bulk Container Code		Apply to UN numbers:
4.1		II	BK2	A	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks:</u> 1309, 1323, 1325, 1326, 1339, 1341, 1343, 1345, 1352, 1358, 1437, 1868, 1871, 2925, 2926, 2989, 3089, <u>3175(x)</u> 3178, 3179, 3180, 3181, 3182, 3242
				x	<u>Currently allocated BK1 and BK2</u> <u>3175</u>
				F	<u>Not permitted in UN portable tanks nor in RID/ADR tanks:</u> 1333, 2557, 2907
4.1		III	BK1, BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks:</u> 1309, 1312, 1313, 1314, 1318, 1325, 1328, 1330, 1332, <u>1334</u> , 1338, 1346, <u>1350</u> , 1869, 2001, <u>2213</u> , 2538, 2687, 2714, 2715, 2717, 2878, 2989, 3089, 3097, 3178, 3181, 3182
				F	<u>Not permitted in UN portable tanks nor in RID/ADR tanks</u> 1353, 2956, 3241, 3251
4.1	6.1 or 8	III	BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 2925, 2926, 3179, 3180
4.2		III	BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 1361, 1362, 1373, <u>1376</u> , 1932, 2008, 2210, 2545, 2546, 2881, 3088, 3126*, 3127*, 3128*, 3174, 3189, 3190, 3191, 3192, 3205, 3206, 3313, 3341, 3342 *: not permitted by IMDG Code
				B	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3400
				F	<u>Not permitted in UN portable tanks nor in RID/ADR tanks</u> 1363, 1364, 1365, 1379, 1386, 2006, 2217

Class/ Div.	Relevant Sub. risk	PG	Bulk Container Code		Apply to UN numbers:
4.3		II	BK2	A	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks</u> 1340, 1390, 1393, 1394, 1395, 1396, 1400, 1401, 1402, 1405, 1409, 1417, 1418, 1436, 2624, 2805, 2813, 2830, 2835, 3078, 3131*, 3132*, 3134, 3135, <u>3170 (x)</u> , 3208, 3209, 3372* *: not permitted by IMDG Code <u>Currently allocated BK1 and BK2</u> <u>3170</u>
				x	
				B	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3395, 3396, 3397
4.3		III	BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 1396, 1398, 1403, 1405, <u>1408</u> , 1418, 1435, 1436, 2813, 2844, <u>2950</u> , 2968, 3131*, 3132*, 3134, 3135, <u>3170 (x)</u> , 3208, 3209, 3372* *: not permitted by IMDG Code <u>Currently allocated BK1 and BK2</u> <u>3170</u>
				x	
				B	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3395, 3396, 3397
5.1		II	BK2	A	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks</u> 1439, 1442, 1445, 1446, 1447, 1448, 1449, 1450, 1452, 1453, 1455, 1456, 1457, 1458, 1459, 1461, 1462, 1463, 1469, 1470, 1472, 1473, 1475, 1476, 1477, 1479, 1481, 1482, 1483, 1484, 1485, 1487, 1488, 1489, 1490, 1493, 1494, <u>1495 (x)</u> , 1496, 1502, 1503, 1506, 1508, 1509, 1512*, 1513, 1514, 1515, 1516, 2464, 2465, 2468, 2573, 2626*, 2627, 2719, 2721, 2723, 2741, 3085, 3087, 3212, 3247, *: not permitted by IMDG Code <u>Currently allocated BK1 and BK2</u> <u>1495</u>
				x	
				B	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach</u> <u>3378(x)</u>
				x	<u>Currently allocated BK1 and BK2</u> <u>3378</u>
				D	<u>Not permitted in UN portable tanks but permitted in RID/ADR tanks :</u> 1471*, 1748, 2880 *: permitted by IMDG Code

Class/ Div.	Relevant Sub. risk	PG	Bulk Container Code		Apply to UN numbers:
5.1		III	BK1, BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> <u>1438</u> , 1444, 1451, <u>1454</u> , 1458, 1459, 1465, 1466, 1467, <u>1474</u> , 1477, 1479, 1481, 1482, 1483, <u>1486</u> , 1492, <u>1498</u> , <u>1499</u> , 1505, 1507, 1872, <u>1942</u> , <u>2067</u> , 2469, 2720, 2722, 2724, 2725, 2726, 2728, 3215
				B	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach</u> <u>3377</u> , <u>3378</u>
				D	<u>Not permitted in UN portable tanks but permitted in RID/ADR tanks :</u> 2208
5.1	6.1 or 8	III	BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 1500, 1511, 3085, 3087
6.1		II	BK2	A	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks</u> 1544, 1546, 1554, 1555, 1557, 1558, 1559, 1561, 1562, 1564, 1566, 1567, 1569, 1572, 1573, 1574, 1578, 1585, 1586, 1587, 1588, 1596, 1598, 1601, 1606, 1607, 1608, 1617, 1618, 1620, 1621, 1622, 1623, 1624, 1625, 1627, 1629, 1630, 1631, 1634, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1650, 1651, 1652, 1653, 1655, 1657, 1659, 1661, 1671, 1674, 1677, 1678, 1679, 1683, 1684, 1685, 1688, 1691, 1697, 1707, 1712, 1751, 1843, 1885, 1894, 1895, 2018, 2025, 2026, 2027, 2250, 2261, 2567, 2570, 2587, 2588, 2645, 2647, 2649, 2657, 2671, 2673, 2727, 2757, 2759, 2761, 2763, 2771, 2775, 2777, 2779, 2781, 2783, 2786, 2811, 2859, 2861, 2863, 2864, 2928, 2930, 2931, 3027, 3086, 3124, 3125, 3143, 3146, 3155, <u>3243 (x)</u> , 3249, 3283, 3284, 3285, 3288, 3290, 3345, 3349
				x	<u>Currently allocated BK1 and BK2</u> <u>3243</u>
				B	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3417, 3428, 3431, 3436, 3437, 3439, 3441, 3442, 3443, 3444, 3445, 3446, 3447, 3448, 3451, 3452, 3454, 3455, 3462, 3464, 3465, 3466, 3467
				F	<u>Not permitted in UN portable tanks nor in RID/ADR tanks:</u> 1687

Class/ Div.	Relevant Sub. risk	PG	Bulk Container Code		Apply to UN numbers:
6.1		III	BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 1544, 1548, 1549, 1550, 1551, 1557, 1564, 1566, 1579, 1588, 1601, 1616, 1655, 1663, 1673, 1690, 1709, 1812, 1884, 2020, 2025, 2026, 2074, 2233, 2237, 2239, 2291, 2446, 2473, 2505, 2512, 2516, 2570, 2588, 2651, 2655, 2659, 2660, 2662, 2674, 2713, 2716, 2729, 2757, 2759, 2761, 2763, 2771, 2775, 2777, 2779, 2781, 2783, 2786, 2811, 2853, 2854, 2855, 2856, 2862, 2871, 2875, 2876, 3027, 3143, 3146, 3249, 3283, 3284, 3285, 3288, 3345, 3349
				B	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3427, 3438, 3439, 3457, 3458, 3459, 3460, 3462, 3464, 3465, 3466, 3467
6.2			BK1, BK2	C	<u>Permitted in bulk containers but not in UN portable tanks</u> <u>2900</u>
7			BK2	B	<u>Permitted in UN portable tanks and in RID/ADR tanks, but not included in the rationalized tank approach</u> T5, TP4: 2912 (LSA-I)
				E	<u>Permitted in UN portable tanks (T5, TP4) but not in RID/ADR tanks</u> 2913 (SCO-I)
8		II	BK2	A	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks</u> 1725, 1726, 1727, 1740, 1756, 1759, 1770, 1794, 1806, 1807, 1811, 1813, 1823, 1825, 1839, 1847, 1849, 1939, 2033, 2430, 2439, 2506, 2509, 2583, 2670, 2678, 2680, 2682, 2691, 2869, 2921, 2923, 3084, 3095, 3096, 3147, <u>3244 (x)</u> 3259, 3260, 3261, 3262, 3263
				x	<u>Currently allocated BK1 and BK2</u> <u>3244</u>
				B	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3419, 3420, 3423, 3425, 3456
8		III	BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 1740, 1759, 1773, 1907, 1910, 2214, 2215, 2280, 2331, 2430, 2440, 2475, 2503, 2507, 2508, 2578, 2579, 2585, 2698, 2802, 2803, 2812, 2823, 2834, 2865, 2869, 2905, 2923, 2967, 3147, 3253, 3259, 3260, 3261, 3262, 3263
				B	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3453

Class/ Div.	Relevant Sub. risk	PG	Bulk Container Code		Apply to UN numbers:
9		II	BK2	A	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks</u> 2212, <u>2969 (x)</u> , 3152
				x	<u>Currently allocated BK1 and BK2</u> <u>2969</u>
				B	<u>Permitted in UN portable tanks (T3, TP33) and in RID/ADR tanks, but not included in the rationalized tank approach:</u> 3432
9		III	BK1, BK2	A	<u>Permitted in UN portable tanks (T1, TP33) and in RID/ADR tanks</u> 1841, 1931, 2211, 2216, 2590, 3077
				F	<u>Not permitted in UN portable tanks nor in RID/ADR tanks:</u> 3258