Technical Circular

No.: 006/2014

Date: 24 February 2014

Subject: The 2012 amendments to the International Code for the construction and equipment of ships carrying Dangerous Chemicals in Bulk (IBC code)

The Resolution MSC.340 (91) adopted on 30th Nov 2012 amends the IBC code chapter-17, 18 & 19 which will enter into force from 1st June 2014.

Amendment includes change in the carriage requirements of nearly 158 existing products and inclusion of around 45 new products to the list of in Ch.17. Few products have been deleted from the list in Ch. 17 and some have been shifted to Ch.18 –list of products to which the code does not apply.

Carriage requirements of the existing products have been mostly affected in column-i (electrical equipment) of Chapter-17. Temperature class and apparatus group requirement for existing products have been upgraded/changed. Hence existing products are to be evaluated vis a vis the existing environment on the ship for compliance with the new requirement to continue to be permitted for carriage and hence to continue to be listed in the Certificate of Fitness.

Electrical installations: Carriage requirement with respect to temperature class of electrical equipment has been upgraded for some existing products in the 2012 IBC Code amendment.

Column i' specifies the temperature class (T1 to T6) for a product. For example products requiring T3 temperature class can be permitted for electrical equipment assigned with temperature class T3 to T6 but electrical equipment assigned with temperature class T1 & T2 will not be allowed.

Similarly electrical equipment in gas dangerous zone are to comply with apparatus group criteria i.e. IIA, IIB or IIC (column *i''). For example* electrical equipment assigned with apparatus Group IIB can be used for products requiring apparatus group IIA & IIB but are not suitable for products requiring apparatus group IIC. Temperature class and apparatus group related information can be verified from the approval certificate for the electrical equipment issued by administration or the RO.

Devices to prevent passage of flame into cargo tanks: IBC Code Reg.8.3.6 requires controlled tank venting systems fitted to tanks to be used for cargoes having a flashpoint not exceeding 60°C (closed-cup test) to be provided with devices to prevent the passage of flame into the cargo tanks. The design, testing and locating of the devices are to comply with the requirements of the Administration, which shall contain at least the standards adopted by the Organization.

Carriage requirement of the products in IBC Code specifies the apparatus group requirement and this requirement is dependent on the devices fitted on the ship to prevent passage of flame into cargo tanks (such as P/V valves, flame arrestors and flame screens).

MSC/Circ.677 provided standard for design, testing and location of such devices. This has been amended by MSC.1/Circ.1324. Revised guideline specifies testing requirements (media for testing) for devices certified for the carriage of products with MESG (Maximum Experimental Safe gap) less than 0.9mm which was not specified in the earlier circular. Hence devices certified as per MSC/Circ.677 need to be reapproved as per MSC.1/Circ.1324 in case these may be allowed to be fitted for products requiring apparatus group IIB & IIC. The revised standard is applicable to ships constructed on or after 1 January 2013 and to ships constructed before 1 January 2013, at the first scheduled dry-docking carried out on or after 1 January 2013.

Hence devices certified under MSC/Circ.677, if not reapproved as per MSC.1/Circ.1324 will only be suitable for products requiring apparatus group IIA. Products for which no apparatus group is assigned, devices to be tested in accordance with requirement for apparatus group IIB.

Apparatus group related information for which the device is certified for, can be verified from type approval certificate, technical manual and in the name plate of the device.

Verification of Compliance: Devices fitted on ship for prevention of passage of flame into cargo tanks and electrical equipment in gas dangerous zone will be verified against the revised carriage requirement as per 2012 amendment. Carriage requirement for any product listed in the existing certificate if not met will be deleted from the list and a new certificate of fitness will be issued. Any loading after 1st June 2014 shall be in accordance with the 2012 IBC Code amendment.

Owners/managers will be required to communicate and submit to IRS Head office documents in support of compliance with the new requirements prior to 1st June 2014.

Based on initial vetting at H.O., field surveyor will be advised to carry out necessary verification on board and issue Certificate of Fitness with cargoes compliant with the new requirement.

Enclosure:
Annexure-1: List of existing products with changes in carriage requirements in Chapter 17 of the IBC code is highlighted.

Product name *(column a)*	The product name shall be used in the shipping document for any cargo offered for bulk shipments. Any additional name may be included in brackets after the product name. In some cases, the product names are not identical with the names given in previous issues of the Code
UN Number *(column b)*	Deleted
Pollution Category *(column c)*	The letter X, Y, Z means the Pollution Category assigned to each product under MARPOL Annex II
Hazards *(column d)*	"S" means that the product is included in the Code because of its safety hazards; "P" means that the product is included in the Code because of its pollution hazards; and "S/P" means that the product is included in the Code because of both its safety and pollution hazards
Ship type *(column e)*	1: ship type 1 (2.1.2.1) 2: ship type 2 (2.1.2.2) 3: ship type 3 (2.1.2.3)
Tank type *(column f)*	1: independent tank (4.1.1) 2: integral tank (4.1.2) G: gravity tank (4.1.3) P: pressure tank (4.1.4)
Tank vents *(column g)*	Cont.: controlled venting Open: open venting
Tank environmental control *(column h)*	Inert: inerting (9.1.2.1) Pad: liquid or gas padding (9.1.2.2) Dry: drying (9.1.2.3) Vent: natural or forced ventilation (9.1.2.4) No: no special requirements under this Code
Electrical equipment *(column i)*	Temperature classes (i') T1 to T6 – indicates no requirements blank no information Apparatus group (i") IIA, IIB or IIC: – indicates no requirements blank no information Flashpoint (i'") Yes: flashpoint exceeding 60°C (10.1.6) No: flashpoint not exceeding 60°C (10.1.6) NF: non-flammable product (10.1.6)
Gauging *(column j)*	O: open gauging (13.1.1.1) R: restricted gauging (13.1.1.2) C: closed gauging (13.1.1.3)
Vapour detection *(column k)*	F: flammable vapours T: toxic vapours No: indicates no special requirements under this Code
Fire protection *(column l)*	A: alcohol-resistant foam or multi-purpose foam B: regular foam; encompasses all foams that are not of an alcohol-resistant type, including fluoro-protein and aqueous-film-forming foam (AFFF) C: water-spray D: dry chemical No: no special requirements under this Code
Materials of construction *(column m)*	Deleted
Emergency equipment *(column n)*	Yes: see 14.3.1 No: no special requirements under this Code
Specific and operational requirements *(column o)*	When specific reference is made to chapters 15 and/or 16, these requirements shall be additional to the requirements in any other column

Annexure-1

List of existing products with Changes in carriage requirements in Chapter 17 which require upgradation/retroactive arrangements onboard towards compliance to IBC code amendments :

a	c	d	e	f	g	h	i'	i"	i"'	j	k	l	n	o
Alkanes (C6-C9) [a46]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Iso- and cyclo-alkanes (C10-C11) [a47]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Iso- and cyclo-alkanes (C12+) [a48]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	
n-Alkanes (C10+) [a49]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Alkyl acrylate-vinylpyridine copolymer in toluene [a50]	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6, 16.2.9
Alkyl (C3-C4) benzenes [a51]	Y	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Alkyl (C8-C9) phenylamine in aromatic solvents [a52]	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6
Ammonium sulphide solution (45% or less) [a53]	Y	S/P	2	2G	Cont	No	T4	IIB	No	C	FT	A	No	15.12, 15.17, 15.19, 16.6.1, 16.6.3
Amyl acetate (all isomers) [a54]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
n-Amyl alcohol [a55]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	
Amyl alcohol, primary [a56]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	AB	No	
sec-Amyl alcohol [a57]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	AB	No	
tert-Amyl alcohol [a58]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	
tert-Amyl methyl ether [a59]	X	P	2	2G	Cont	No	T2	IIB	No	R	F	A	No	15.19.6
Aviation alkylates (C8 paraffins and iso-paraffins BPT 95 - 120°C) [a60]	X	P	2	2G	Cont	No	T4	IIA	No	R	F	B	No	15.19.6
Butyl acetate (all isomers) [a61]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
tert-Butyl alcohol [a62]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	
Butylamine (all isomers) [a63]	Y	S/P	2	2G	Cont	No	T2	IIA	No	R	FT	A	Yes	15.12, 15.17, 15.19.6
Butylbenzene (all isomers) [a64]	X	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Butyl butyrate (all isomers) [a65]	Y	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6
Butyl methacrylate [a66]	Z	S/P	3	2G	Cont	No	T1	IIA	No	R	FT	AD	No	15.13, 15.19.6, 16.6.1, 16.6.2
n-Butyl propionate [a67]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Calcium long-chain alkyl phenate sulphide (C8-C40) [a68]	Y	S/P	2	2G	Open	No	-	-	Yes	O	No	ABC	No	15.19.6, 16.2.6
Cashew nut shell oil (untreated) [a69]	Y	S/P	2	2G	Cont	No	-	-	Yes	R	T	AB	No	15.19.6, 16.2.6, 16.2.9
Chlorohydrins (crude) [a70]	Y	S/P	2	2G	Cont	No	T3	IIA	No	C	FT	A	No	15.12, 15.19
m-Chlorotoluene [a71]	Y	S/P	2	2G	Cont	No	T4	IIA	No	R	FT	AB	No	15.19.6
o-Chlorotoluene [a72]	Y	S/P	2	2G	Cont	No	T1	IIA	No	R	FT	AB	No	15.19.6
p-Chlorotoluene [a73]	Y	S/P	2	2G	Cont	No	T1	IIA	No	R	FT	AB	No	15.19.6, 16.2.9
Chlorotoluenes (mixed isomers) [a74]	Y	S/P	2	2G	Cont	No	T4	IIA	No	R	FT	AB	No	15.19.6
Cycloheptane [a75]	X	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Cyclohexane [a76]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6, 16.2.9

Cyclohexyl acetate [a77]	Y	P	3	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
1,3-Cyclopentadiene dimer (molten) [a78]	Y	P	2	2G	Cont	No	T1	IIB	No	R	F	A	No	15.19.6, 16.2.6, 16.2.9
Cyclopentane [a79]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Cyclopentene [a80]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
p-Cymene [a81]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Decahydronaphthalene [a82]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	AB	No	15.19.6
Decene [a83]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Diacetone alcohol [a84]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	
3,4-Dichloro-1-butene [a85]	Y	S/P	2	2G	Cont	No	T1	IIA	No	C	FT	ABC	Yes	15.12.3, 15.17, 15.19.6
1,6-Dichlorohexane [a86]	Y	S/P	2	2G	Cont	No	-	-	Yes	R	T	AB	No	15.19.6
1,1-Dichloropropane [a87]	Y	S/P	2	2G	Cont	No	T4	IIA	No	R	FT	AB	No	15.12, 15.19.6
Dichloropropene/Dichloropropane mixtures [a88]	X	S/P	2	2G	Cont	No	T2	IIA	No	C	FT	ABD	Yes	15.12, 15.17, 15.18, 15.19
Diethylbenzene [a89]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Diisobutylamine [a90]	Y	S/P	2	2G	Cont	No	T4	IIB	No	R	FT	ACD	No	15.12.3, 15.19.6
Diisobutylene [a91]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Diisobutyl ketone [a92}	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Dimethylamine solution (greater than 45% but not greater than 55%) [a93]	Y	S/P	2	2G	Cont	No	T2	IIB	No	C	FT	ACD	Yes	15.12, 15.17, 15.19
Dimethylamine solution (greater than 55% but not greater than 65%) [a94]	Y	S/P	2	2G	Cont	No	T2	IIB	No	C	FT	ACD	Yes	15.12, 15.14, 15.17, 15.19
N,N-Dimethylcyclohexylamine [a95]	Y	S/P	2	2G	Cont	No	T3	IIB	No	R	FT	AC	No	15.12, 15.17, 15.19.6
Dimethyl disulphide [a96]	Y	S/P	2	2G	Cont	No	T3	IIA	No	R	FT	B	No	15.12.3, 15.12.4, 15.19.6
Dipentene [a97]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Di-n-propylamine [a98]	Y	S/P	2	2G	Cont	No	T3	IIB	No	R	FT	A	No	15.12.3, 15.19.6
Dodecane (all isomers) [a99]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	AB	No	15.19.6
Dodecylbenzene [a100]	Z	P	3	2G	Open	No	-	-	Yes	O	No	AB	No	
Epichlorohydrin [a101]	Y	S/P	2	2G	Cont	No	T2	IIB	No	C	FT	A	Yes	15.12, 15.17, 15.19
2-Ethoxyethyl acetate [a102]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Ethyl acetate [a103]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	
Ethylamine solutions (72% or less) [a104]	Y	S/P	2	2G	Cont	No	T2	IIA	No	C	FT	AC	Yes	15.12, 15.14, 15.17, 15.19
Ethyl amyl ketone [a105]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Ethylbenzene [a106]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Ethyl tert-butyl ether [a107]	Y	P	3	2G	Cont	No	T2	IIB	No	R	F	A	No	15.19.6
Ethyl butyrate [a108]	Y	P	3	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Ethylcyclohexane [a109]	Y	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
N-Ethylcyclohexylamine [a110]	Y	S/P	2	2G	Cont	No	T3	IIB	No	R	FT	A	No	15.19.6
Ethylene glycol monoalkyl ethers [a111]	Y	S/P	3	2G	Cont	No	T2	IIB	No	R	F	A	No	15.19.6, 16.2.9
Ethyl-3-ethoxypropionate [a112]	Y	P	3	2G	Cont	No	T2	IIA	No	R	No	A	No	15.19.6
2-Ethylhexylamine [a113]	Y	S/P	2	2G	Cont	No	T3	IIA	No	R	FT	A	No	15.12, 15.19.6
Ethylidene norbornene [a114]	Y	S/P	2	2G	Cont	No	T3	IIB	No	R	FT	AD	No	15.12.1, 15.19.6
Ethyl propionate [a115]	Y	P	3	2G	Open	No	T1	IIA	No	R	F	A	No	15.19.6
2-Ethyl-3-propylacrolein [a116]	Y	S/P	3	2G	Cont	No	T3	IIA	No	R	FT	A	No	15.19.6, 16.2.9

Ethyl toluene [a117]	Y	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Heptane (all isomers) [a118]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6, 16.2.9
Heptanol (all isomers) (d) [a119]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Heptene (all isomers) [a120]	Y	P	3	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Hexamethylenediamine (molten) [a121]	Y	S/P	2	2G	Cont	No	-	-	Yes	C	T	AC	Yes	15.12, 15.17, 15.18, 15.19, 16.2.9
Hexamethyleneimine [a122]	Y	S/P	2	2G	Cont	No	T4	IIB	No	R	FT	AC	No	15.19.6
Hexane (all isomers) [a123]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Hexene (all isomers) [a124]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Hexyl acetate [a125]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Isoamyl alcohol [a126]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	AB	No	
Isobutyl alcohol [a127]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	AB	No	
Isobutyl formate [a128]	Z	P	3	2G	Cont	No	T4	IIA	No	R	F	AB	No	
Isobutyl methacrylate [a129]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.12, 15.13, 15.17, 16.6.1, 16.6.2
Isopropyl acetate [a130]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	AB	No	
Isopropylamine (70% or less) solution [a131]	Y	S/P	2	2G	Cont	No	T2	IIA	No	C	FT	CD	Yes	15.12, 15.19.6, 16.2.9
Isopropylcyclohexane [a132]	Y	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6, 16.2.9
Isopropyl ether [a133]	Y	S/P	3	2G	Cont	Inert	T2	IIA	No	R	F	A	No	15.4.6, 15.13.3, 15.19.6
Metam sodium solution [a134]	X	S/P	2	2G	Cont	No	-	-	NF	C	T	No	Yes	15.12, 15.17, 15.19
Methacrylonitrile [a135]	Y	S/P	2	2G	Cont	No	T1	IIA	No	C	FT	A	Yes	15.12, 15.13, 15.17, 15.19
3-Methoxy-1-butanol [a136]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	
Methyl acetate [a137]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	
Methyl alcohol [a138]	Y	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6
Methylamine solutions (42% or less) [a139]	Y	S/P	2	2G	Cont	No	T2	IIA	No	C	FT	ACD	Yes	15.12, 15.17, 15.19
Methylamyl acetate [a140]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Methylamyl alcohol [a141]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Methyl amyl ketone [a142]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Methylbutenol [a143]	Y	P	3	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6, 16.2.9
Methyl tert-butyl ether [a144]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	AB	No	
Methyl butyl ketone [a145]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	AB	No	15.19.6
Methylbutynol [a146]	Z	P	3	2G	Cont	No	T4	IIB	No	R	F	A	No	
Methyl butyrate [a147]	Y	P	3	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Methylcyclohexane [a148]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Methylcyclopentadiene dimmer [a149]	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	B	No	15.19.6
Methyl ethyl ketone [a150]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	
Methyl formate [a151]	Z	S/P	2	2G	Cont	No	T1	IIA	No	R	FT	A	Yes	15.12, 15.14, 15.19
2-Methyl-2-hydroxy-3-butyne [a152]	Z	S/P	3	2G	Cont	No	T3	IIA	No	R	FT	ABD	No	15.19.6, 16.2.9
Methyl isobutyl ketone [a153]	Z	P	3	2G	Cont	No	T1	IIA	No	R	F	AB	No	
2-Methylpyridine [a154]	Z	S/P	2	2G	Cont	No	T1	IIA	No	C	F	A	No	15.12.3, 15.19.6
3-Methylpyridine [a155]	Z	S/P	2	2G	Cont	No	T1	IIA	No	C	F	AC	No	15.12.3, 15.19
4-Methylpyridine [a156]	Z	S/P	2	2G	Cont	No	T1	IIA	No	C	FT	A	No	15.12.3, 15.19, 16.2.9
Myrcene [a157]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6, 16.2.9
Nitroethane [a158]	Y	S/P	3	2G	Cont	No	T2	IIB	No	R	FT	A(f)	No	15.19.6, 16.6.1, 16.6.2, 16.6.4

Nitroethane(80%)/ Nitropropane(20%) [a159]	Y	S/P	3	2G	Cont	No	T2	IIB	No	R	FT	A(f)	No	15.19.6, 16.6.1
Nitroethane, 1-Nitropropane (each 15% or more) mixture [a160]	Y	S/P	3	2G	Cont	No	T2	IIB	No	R	F	A	No	15.19.6, 16.2.6, 16.6.1, 16.6.2, 16.6.3
Nitropropane (60%)/Nitroethane (40%) mixture [a161]	Y	S/P	3	2G	Cont	No	T4	IIB	No	R	FT	A(f)	No	15.19.6
Nonane (all isomers) [a162]	X	P	2	2G	Cont	No	T4	IIA	No	R	F	BC	No	15.19.6
Nonene (all isomers) [a163]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Octane (all isomers) [a164]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Octene (all isomers) [a165]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Octyl aldehydes [a166]	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6, 16.2.9
Olefin mixtures (C5-C7) [a167}	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Olefin mixtures (C5-C15) [a168}	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
alpha-Olefins (C6-C18) mixtures [a169]	X	P	2	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6, 16.2.9
Paraldehyde-ammonia reaction product [a170]	Y	S/P	2	2G	Cont	No	T4	IIB	No	C	FT	A	No	15.12.3, 15.19
1,3-Pentadiene [a171]	Y	S/P	3	2G	Cont	No	T1	IIA	No	R	FT	AB	No	15.13, 15.19.6, 16.6.1, 16.6.2, 16.6.3
Pentane (all isomers) [a172]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.14, 15.19.6
Pentene (all isomers) [a173]	Y	P	3	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
n-Pentyl propionate [a174]	Y	P	3	2G	Cont	No	T4	IIA	No	R	F	A	No	15.19.6
Phosphate esters, alkyl (C12-C14) amine [a175]	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6, 16.2.6, 16.2.9
alpha-Pinene [a176]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
beta-Pinene [a177]	X	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6
Polyalkyl (C18-C22) acrylate in xylene [a178}	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	AB	No	15.19.6, 16.2.6, 16.2.9
Polyolefinamine in alkyl (C2-C4) benzenes [a179}	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6, 16.2.6, 16.2.9
Polyolefinamine in aromatic solvent [a180][	Y	P	2	2G	Cont	No	T4	IIB	No	R	F	A	No	15.19.6
Polysiloxane [a181]	Y	P	3	2G	Cont	No	T4	IIB	No	R	F	AB	No	15.19.6, 16.2.9
Propionaldehyde [a182]	Y	S/P	3	2G	Cont	No	T4	IIB	No	R	FT	A	Yes	15.17, 15.19.6
n-Propyl acetate [a183]	Y	P	3	2G	Cont	No	T1	IIA	No	R	F	AB	No	15.19.6
n-Propyl alcohol [a184}	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Propylbenzene (all isomers) [a185]	Y	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6
Propylene glycol methyl ether acetate [a186]	Z	P	3	2G	Cont	No	T2	IIA	No	R	F	A	No	
Propylene glycol monoalkyl ether [a187]	Z	P	3	2G	Cont	No	T3	IIA	No	R	F	AB	No	
Propylene tetramer [a188]	X	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Propylene trimer [a189]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6
Sodium chlorate solution (50% or less) [a190]	Z	S/P	3	2G	Open	No	-	-	NF	O	No	No	No	15.9, 15.19.6, 16.2.9
Sodium hydrosulphide/Ammonium sulphide solution [A191]	Y	S/P	2	2G	Cont	No	T4	IIB	No	C	FT	A	Yes	15.12, 15.14, 15.17, 15.19, 16.6.1, 16.6.2, 16.6.3]
Tall oil, crude [a192]	Y	S/P	2	2G	Open	No	-	-	Yes	O	No	ABC	No	15.19.6, 16.2.6

Tall oil pitch [a193]	Y	S/P	2	2G	Open	No	-	-	Yes	O	No	ABC	No	15.19.6, 16.2.6
Toluene [a194]	Y	P	3	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6
Triethyl phosphite [a195]	Z	S/P	3	2G	Cont	No	T3	IIA	No	R	FT	AB	No	15.12.1, 15.19.6, 16.2.9
Trimethylamine solution (30% or less) [a196]	Z	S/P	2	2G	Cont	No	T3	IIB	No	C	FT	AC	No	15.12, 15.14, 15.19, 16.2.9
Trimethylbenzene (all isomers) [a197]	X	P	2	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6
1,3,5-Trioxane [a198]	Y	S/P	3	2G	Cont	No	T2	IIB	No	R	F	AD	No	15.19.6, 16.2.9
Turpentine [a199]	X	P	2	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6
Vinyltoluene [a200]	Y	S/P	2	2G	Cont	No	T1	IIA	No	R	F	AB	No	15.13, 15.19.6, 16.6.1, 16.6.2
White spirit, low (15-20%) aromatic [a201]	Y	P	2	2G	Cont	No	T3	IIA	No	R	F	A	No	15.19.6, 16.2.9
Xylenes[a202]	Y	P	2	2G	Cont	No	T1	IIA	No	R	F	A	No	15.19.6, 16.2.9(h)
Xylenes/ethylbenzene (10% or more) mixture [a203]	Y	P	2	2G	Cont	No	T2	IIA	No	R	F	A	No	15.19.6