

VOTO
PROCESSO: 60800.203068/2011-16
INTERESSADO: EMPRESA BRASILEIRA DE CORREIOS E TELEGRAFOS
DECISÃO DE SEGUNDA INSTÂNCIA ADMINISTRATIVA

NUP	Crédito de Multa (SIGEC)	Auto de Infração (AI)	Tripulante / Aeroporto / Balção / Local / Hora / Portão de Embarque / etc. (dados para individualização)	Data da Infração	Lavratura do AI	Notificação do AI	Decisão de Primeira Instância (DC1)	Notificação da DC1	Multa aplicada em Primeira Instância	Protocolo do Recurso	Aferição Tempestividade
60800.203068/2011-16	645.938/15-2	4943/2011	ECT	29/01/2011	08/09/2011	28/11/2011	14/11/2014	16/02/2015	R\$ 14.000,00	18/02/2015	N/A

Enquadramento: seção 175.5 (i) do RBAC 175, bem como o artigo 299, inciso II da Lei n.º 7.565/1.986 (Código Brasileiro de Aeronáutica - CBAer).

Infração: Expedir artigo perigoso não-declarado;

Relator(a): Eduardo Viana Barbosa – SIAPE 1624783 (Portaria Nomeação Membro Julgador ANAC nº 1381, DIRP/2016)

1. DOS ATOS PROCESSUAIS E DOCUMENTOS CONSTANTES DOS AUTOS

- **PROCESSO** - 60800.203068/2011-16
- **Data do Fato:** 29/01/2011
- **Auto de Infração [AI]** n.º 4943/2011, de 08/09/2011;
- **Relatório de Ocorrência** de 08/09/2011, (fl. 02);
- **Lauda Pericial** n.º 0094/2011 - SETEC/SR/DPF/BA, (fl. 13);
- **Aviso de Recebimento [AR]:** recebido em 05/12/2011, (fl.18);
- **Defesa Prévia [DP],** recebido em 19/12/2011, (fls. 19 à 29);
- **Decisão de Primeira Instância:** prolatada em 29/12/2014, (fls. 64 à 66);
- **Notificação Regular, via AR, referente à Decisão condenatória de Primeira Instância:** em 16/01/2015, (fl. 14);
- **Recurso Administrativo [RC],** protocolado em 02/02/2015, (fls. 16 à 20);

2. INTRODUÇÃO

2.1. Tratam-se de recurso interpostos pela EMPRESA BRASILEIRA DE CORREIOS E TELEGRAFOS, referente ao processo administrativo discriminado no quadro acima, que individualiza a materialidade infracional e retrata os marcos relevantes para o trâmite e regularidade processual.

2.2. Os autos evidenciam que: " Foi constatado, no dia 29/01/2011 no Aeroporto Internacional Luiz Eduardo Magalhães - Salvador que, de acordo com e-mail, encaminhado pela INFRAERO em 31 de janeiro de 2011, protocolado na ANAC sob o número 60800.022883/2011-86 na qual a EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS - ECT mencionada na condição de intermediária entre o expedidor de carga aérea e o operador aéreo, foi oferecido para embarque artigo perigoso oculto. A EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS - ECT, não se certificou de que o artigo oferecido para o transporte aéreo tratava-se ou não de um artigo perigoso e aceitou mercadoria contendo artigo perigoso pelo modal aéreo. Dessa forma, a EMPRESA BRASILEIRA DE CORREIOS E TELÉGRAFOS - ECT está descumprindo a regulamentação, conforme RBAC 175, 175.5(i), infringindo o Código Brasileiro de Aeronáutica (CBA Art. 299 II).

3. HISTÓRICO

3.1. Respaldo pelo art. 50, § 1º, da Lei 9.784/1999 aproveita-se como parte integrante desta análise relato constante da Decisão de Primeira Instância constante dos autos.

3.2. Em **Defesa Prévia**, a empresa alega:

- Segundo informações constantes do documento NOTA TÉCNICA/DESOP-007/2011 (em anexo), conforme diligências realizadas à época, constatou-se que a ocorrência citada no Auto de Infração n.º 04943/2011 referia-se ao vazamento de líquido de forte odor, irritante e nauseante, que invadia a cabine da tripulação, proveniente da mala ML897694812, localizada no porão traseiro da aeronave da Cia. Aérea AIR BRASIL, que realizava a Linha A-6 da RPM, na operação do dia 28 para o dia 29/01/11. Ao abrir a citada mala postal, expedida pelo CTCE/BELÉM/PA e destinada ao CEE/SÃO LUIS/MA, verificou-se a existência da encomenda SZ116619995BR, postada em 25/01/2011 na ACF JARDIM URANO, remetida por MÁRIO GOMES, com endereço na Rua José Piceme n.º 402 - Bairro de São Manoel - São José do Rio Preto/SP, CEP 15091-200, e endereçada à ELIANE COSTA, na Rua Castelo Branco n.º 921 - Bairro Centro - Açailândia/MA, CEP 65930-000, que continha 06 garrafas plásticas, de onde vazava o líquido em questão.
- Em função de tal vazamento, o Comandante do voo, Sr. Pierce Napoleão Brooks, requisitou a presença da INFRAERO, ANVISA e CORPO DE BOMBEIROS, que, não podendo identificar de imediato o líquido em questão, interditaram a aeronave para dar continuidade aos trechos faltantes da linha A6 (Salvador/BA X Teresina/PI e Teresina/PI X São Luís/MA). Além disso, a encomenda SEDEX SZ116619995BR foi retida e apreendida no TECA/Salvador/DF, para que fosse providenciada a identificação do líquido que vazava.

- Nesse contexto, a ECT foi autuada por descumprir a regulamentação contida no Regulamento Brasileiro da Aviação Civil (RBAC) 175, 175.5(i), infringindo o Código Brasileiro de Aeronáutica (CBA), consoante o disposto no Art. 299, inciso II. Os dispositivos legais mencionados estabelecem, in litteris:

- Regulamento Brasileiro da Aviação Civil (RBAC) 175:
"175.5 Limitações e proibições
(...)
- (i) Com exceção do disposto abaixo, os artigos perigosos estão proibidos de serem transportados pelos Correios pelo modal aéreo.
(1) amostras de materiais para exames médicos laboratoriais, desde que estejam devidamente classificadas, embaladas e marcadas;"
Código Brasileiro de Aeronáutica CBA:
"Art. 299. Será aplicada multa de até 1.000 (mil) valores de referência, ou de suspensão ou cassação de quaisquer certificados de matrícula, habilitação, concessão, autorização, permissão ou homologação expedidos segundo as regras deste Código, nos seguintes casos:
(...)
- II - execução de serviços aéreos de forma a comprometer a ordem ou a segurança pública, ou com violação das normas de segurança dos transportes;"
É a breve síntese dos fatos.

• II - DO DIREITO

A autuação desta Empresa Pública teve por fundamento a alegação de que estava sendo transportado "artigo perigoso", o que afronta as normas de segurança de transportes estabelecidas pela ANAC, pois o Regulamento Brasileiro da Aviação Civil (RBAC) 175, 175.5(1) veda o transporte pelos Correios de artigos perigosos por meio do modal aéreo. No entanto, o objeto postal - SZ116619995BR - transportado pelos Correios consistia líquido de forte odor, irritante e nauseante, como já informado. No que concerne à apuração de tal ocorrência, extrai-se da NOTA TÉCNICA/DESOP-007/2011 que tendo em vista que na estrutura da ECT não há órgão e nem técnicos qualificados para realizar a identificação da substância, foi solicitado o apoio técnico do Setor Técnico-Científico da Superintendência Regional na Bahia/DPF. Após análise, foi emitido o Laudo de Perícia Criminal Federal nº 0094/2011-SETEC/SR/DPF/BA (em anexo), no qual aquele órgão identificou o líquido que vazava da encomenda SZ116619995BR como sendo uma solução aquosa de formaldeído (formol, metanal, etc), substância orgânica molécula H₂CO. **O citado laudo ainda esclarece que o formaldeído não está relacionado nas listas produtos químicos controlados pelo Departamento de Polícia Federal (DPF) e nem pela ANVISA e que tal substância não causa dependência física ou psíquica. Uma vez identificado o líquido, a Cia. Aérea AIR BRASIL foi comunicada que tal substância era formol e que, apesar do forte odor, não provocava perigo à aeronave ou aos tripulantes, além do desconforto já relatado, podendo o porão ser normalmente lavado com água, visando a liberação da aeronave.** Ante essa constatação, o líquido de forte odor, conteúdo do objeto postal, não pode ser classificado como artigo perigoso, o qual, segundo as definições inseridas no Regulamento Brasileiro da Aviação Civil, "significa artigo ou substância que, quando transportada por via aérea, pode constituir risco à saúde, à segurança, à propriedade e ao meio ambiente. A classificação do objeto postal como "artigo perigoso" deveria ser precedida de análise técnica. No entanto, a Agência Nacional de Aviação Civil não apresentou qualquer documento que comprove a classificação do objeto transportado como perigoso segundo as normas de aviação civil, especialmente se a quantidade transportada poderia causar algum dano à saúde. Restando, portanto, tão somente, as informações dispostas na avaliação técnica reproduzida no Laudo já referenciado. Diante dos fatos, notadamente restou constatado que o material em questão não representou risco de dano ao patrimônio, se contrário fosse, alguma avaria teria causado à aeronave respectiva, o que, como se sabe, não ocorreu. Tampouco a segurança pública, ou mesmo a nacional, sofreu alguma lesão, com o vazamento da amostra líquida em espeque. Prosseguindo no rol entabulado por essa autoridade autuadora, temos que relativamente ao risco à saúde humana, mais uma vez não há que se ventilar dita hipótese isto porque, consoante disposto no Laudo da Perícia Criminal Federal, aludida substância não provoca dependência física ou psíquica, bem como não está relacionada nas listas dos produtos químicos controlados pelo DPF ou ANVISA. Por derradeiro, entre os riscos positivados pela regulamentação suscitada, a vulnerabilidade ao meio ambiente, igualmente, não ocorreu, sendo suficiente uma análise perfunctória dos fatos ocorridos, para concluir-se que o meio ambiente ao qual se refere a norma, permanece em seu status quo ante. Veja-se, portanto, que descaracterizado está o perigo alegado por essa autoridade autuadora ante às informações aduzidas no Laudo referendado. No que concerne à vedação à postagem de determinados objetos, a Lei Postal, em seu art. 13, dispõe, in litteris:

- Art. 13º - Não é aceito nem entregue:
I - objeto com peso, dimensões, volume, formato, endereçamento, franqueamento ou acondicionamento em desacordo com as normas regulamentares ou com as previstas em convenções e acordos internacionais aprovados pelo Brasil;
II - substância explosiva, deteriorável, fétida, corrosiva ou facilmente inflamável, cujo transporte constitua perigo ou possa danificar outro objeto;
III - cocaína, ópio, morfina, demais estupefacientes e outras substâncias de uso proibido;
IV - objeto com endereço, dizeres ou desenho injuriosos, Ameaçadores ofensivos a moral ou ainda contrários a ordem pública ou aos interesses do País;
V - animal vivo, exceto os admitidos em convenção internacional ratificada pelo Brasil;
VI - planta viva;

- VII - animal morto;
- VIII - objeto cujas indicações de endereçamento não permitam assegurar a correta entrega ao destinatário;
- IX - objeto cuja circulação no País, exportação ou importação, estejam proibidos por ato de autoridade competente.

- § 1º - A infração a qualquer dos dispositivos de que trata este artigo acarretará a apreensão ou retenção do objeto, conforme disposto em regulamento, sem prejuízo das sanções penais cabíveis.
§ 2º - O remetente de qualquer objeto postal é responsável, perante a empresa exploradora do serviço postal, pela danificação produzida em outro objeto em virtude de inobservância de dispositivos legais e regulamentares, desde que não tenha havido erro ou negligência da empresa exploradora do serviço postal ou do transporte.
- Na remota hipótese de considerar o líquido que vazou da encomenda como artigo perigoso, há que se ter em mente a inexistência de disposição legal impondo à ECT o dever de receber os objetos postais "abertos", visando certificar-se quanto ao cumprimento ou não do art. 13 da Lei Postal, que restringe a postagem de certos tipos de objetos. Ademais, a Constituição Federal, art. 5º, inciso XII, assegura o **sigilo da correspondência**, ao prever que "é inviolável o sigilo da correspondência e das comunicações telegráficas, de dados e das comunicações telefônicas, salvo, no último caso, por ordem judicial, nas hipóteses e na forma que a lei estabelecer para investigação criminal ou instrução processual penal". No mesmo sentido é a Lei Postal ao estabelecer que o "sigilo da correspondência é inviolável Quanto ao acondicionamento do objeto tem-se que a responsabilidade pela embalagem é do remetente, não podendo a empresa prestadora do serviço postal ser responsabilizada pelos danos decorrentes do conteúdo do objeto postal, que é de propriedade e responsabilidade exclusiva do remetente.
- Ressalta-se, ainda, que a classificação do objeto como perigoso, no momento da postagem, também é de responsabilidade do remetente, sendo que aos Correios apenas compete verificar a compatibilidade da embalagem para o transporte aéreo. Assim, quando for o caso, em se tratando de objeto perigoso, o remetente deve declarar o fato no ato da postagem e certificar-se de que todas as medidas de segurança relativas ao transporte foram atendidas. Lembra-se, por oportuno, que não pode ser imposta a esta Empresa Pública obrigação não prevista em lei, sob pena de violação ao Princípio da Legalidade, segundo o qual "ninguém será obrigado a fazer ou deixar de fazer alguma coisa senão em virtude de lei. Desse modo, a ECT não pode ser impelida a classificar os objetos, quando da postagem, como perigosos ou não, bem como não pode ser penalizada pela ausência desta classificação. Cabe lembrar a supremacia da Constituição Federal e da legislação infraconstitucional sobre qualquer ato normativo editado pela Agência Nacional de Aviação Civil, os quais devem guardar compatibilidade com o ordenamento jurídico pátrio.

Na descrição da ocorrência do fato, o Auto de Infração relata que a ECT "não se certificou de que o artigo oferecido para o transporte aéreo tratava-se ou não de um artigo perigoso e aceitou a mercadoria contendo artigo perigoso pelo modal aéreo". Este argumento não merece prosperar, pois esta ECT, por meio do Departamento de Segurança Operacional, adota medidas visando detectar e impedir a circulação no tráfego postal de objetos com conteúdo proibido, observando os limites legais, pois é impedida de simplesmente abrir os objetos postais tendo em vista o sigilo da correspondência. Ademais, restou informado pelo DESOR que ações de rotina e melhorias **foram implementadas** no fluxo operacional da ECT, consoante se extrai da Nota Técnica/DESOP-007/2011, exarada pelo Departamento de Segurança Operacional da ECT, in verbis:

"3. AÇÕES DE ROTINA E MELHORIA IMPLEMENTADAS

Com o intuito de aprimorar a gestão de prevenção e detecção de objetos proibidos e perigosos no fluxo operacional da ECT e em atendimento ao Ofício nº 30/2011/SSO-ANAC (Anexo 2), foram adotadas as seguintes práticas pelo DESOR, no sentido de mitigar a reincidência fato semelhante ao descrito acima:

a) Emitido e enviado às áreas envolvidas relatório contendo propostas de implantação de várias ações, visando a mitigação de ocorrências de postagens de objetos com conteúdo proibido e outros materiais e substâncias que colocam em risco a segurança das operações postais (Anexo 3). Tais propostas basicamente objetivavam mitigar os seguintes problemas:

^ Postagem de encomendas, na Rede de Agências da ECT, com conteúdo em desacordo com o Artigo 13 da Lei 6.538/78;

^ Postagem de encomendas, na Rede de Agências da ECT, contendo mercadorias perigosas, contrariando o Regulamento Brasileiro de Aviação Civil - RBAC nº 175;

v° Postagem de encomendas, na Rede de Agências da ECT, sem a respectiva identificação do remetente, dificultando a ação policial de investigação, nos casos em que as encomendas estão relacionadas a algum crime; e

Utilização da ECT para transportar mercadorias e bens de consumo proibidos, cuja circulação ou comércio gere um ilícito penal, tributário e de ordem econômica (contrabando) e mercadorias sem o devido recolhimento de impostos (descaminho).

Em consequência de tal relatório, foi emitida a todas Diretorias Regionais a CI/DIOPE - 112/2011 - CIRCULAR (Anexo 4), destacando os procedimentos de postagem de encomendas, relativos às condições de admissão no ato da postagem e normas gerais de apresentação dos objetos postais, já normatizados e solicitando o fiel cumprimento de tais procedimentos. Além disso, foi enviada orientação a todas Diretorias Regionais solicitando a afixação no hall de atendimento das Agências de cartaz avisando aos clientes a relação de objetos que não são

aceitos nem entregues pela ECT, de acordo com o artigo 13 da Lei 6.538/78 (Anexo 5).

- b) Realização de reunião com técnicos da Superintendência de Segurança Operacional - SSO/ANAC, ocorrida em 31/03/2011 nas dependências da SSOANAC na cidade do Rio de Janeiro/RJ, para tratar do transporte de cargas perigosas por vias aéreas (vide Ata no Anexo 6). Nesta reunião, os técnicos da ANAC informaram que a ECT não pode transportar carga perigosa, exceto as exceções previstas no regulamento e solicitaram informações sobre o funcionamento das operações da ECT. Naquela ocasião o Chefe do DESOP esclareceu como funcionam os contratos com as Cias Aéreas que executam a RPN, como funciona o Fluxo Postal desde a postagem até a entrega do objeto postal e como são realizadas as fiscalizações eletrônicas, visando detectar a remessa de objetos com conteúdo proibido e/ou perigoso. Após tal explicação, os técnicos da ANAC solicitaram que 100% da carga postal embarcada em aeronaves fosse fiscalizada eletronicamente e manifestaram interesse em conhecer "in loco" as operações de tratamento e fiscalização da carga aérea embarcada.
- c) Já foi elaborado pela ECT e aprovado pela INFRAERO, o Plano de Segurança de Empresa de Serviços e Concessionários Aeroportuários - PSESCA para os 04 (quatro) Terminais de Carga Aérea - TECA da ECT (TECA/Guarulhos/SP, TECA/Galeão/RJ, TECA/Brasília/DF e TECA/Salvador/BA). Conforme previsto nos procedimentos de segurança aeroportuária, foram treinados todos os empregados destes órgãos no Curso de Familiarização em Segurança da Aviação Civil e implantadas ações de melhoria do processo operacional e de infraestrutura, voltadas para a segurança da carga e controle de acesso. Ainda em atendimento ao PSESCA aprovado, já foi iniciado o processo de contratação do Curso Básico de Segurança da Aviação Civil Contra Atos de Interferência Ilícita - AVSEC, visando instruir os empregados da ECT sobre os assuntos voltados para a Segurança da Aviação Civil, bem como dotar a ECT de representante(s) orgânico(s) com capacitação em técnicas e procedimentos de segurança aeroportuária, requisito essencial para formação do Curso de Agente de Proteção da Aviação Civil - APAC.
- d) Realização de visita técnica ao CTCI/Rio de Janeiro/RJ, em 05/07/2011, com o intuito de apresentar "In loco" as operações de tratamento de objetos postais, passando pelo recebimento da carga via superfície, pelo 1º nível de fiscalização (cães farejadores), pela triagem dos objetos postais, pelo 2º nível de fiscalização (sensibilidade do operador + aparelho de raios X + espectrômetro de massa), pela consolidação da carga por destino, pelo 3º nível de fiscalização (aparelho de raios X), conforme Ata no Anexo 7."

- Dentre as medidas de segurança adotadas, a título de exemplo, cita-se a utilização de aparelhos de Raio X e espectrômetros de massa para fiscalizar a carga postal, apreendendo os objetos postados em desconformidade com a legislação. Este procedimento de fiscalização é realizado em objetos selecionados numa amostra qualificada, definida em função, por exemplo, da dimensão e peso do objeto, características da embalagem utilizada, origem e destino do objeto, dentre outros. Restou informado, ainda, pelo Departamento de Segurança Operacional da ECT que ações estão sendo adotadas no sentido de colocar em funcionamento todo o parque de Equipamentos de Segurança Postal, composto por aparelhos de raios X e espectrômetros de massa, utilizado nas atividades de fiscalização eletrônicas, realizadas com o intuito de detectar e impedir a circulação no tráfego postal de objetos com conteúdo proibido e/ou perigoso. Em virtude disso, houve um significativo aumento na quantidade de objetos fiscalizados e na quantidade de objetos apreendidos conforme pode-se observar nos gráficos colacionados à Nota Técnica alhures citada. Dessa feita, nota-se que a ECT tem adotado providências no sentido de evitar, bem como coibir, o surgimento de ocorrências como a aqui discutida. Por fim, verifica-se que a suposta infração foi capitulada com fundamento no art. 299, inciso II, do código Brasileiro da Aeronáutica, já citado nesta peça, que prevê a incidência de multa nos casos de "execução de serviços aéreos de forma a comprometer a ordem ou a segurança pública, ou com violação das normas de segurança dos transportes". Em verdade, esta Empresa Pública não executa serviços aéreos, mas sim o serviço postal de recebimento e entrega de objetos postais, utilizando-se da contratação de empresas de aviação para o transporte. Desse modo, descabe falar em execução de serviços aéreos de forma a comprometer a ordem pública ou com violação das normas de segurança do transporte aéreo, ou seja, não houve a subsunção do fato à norma.
- Assim, requer, à vista de todo o exposto, demonstrada a insubsistência e improcedência do Auto de Infração nº 04943/2011, que seja acolhida a presente DEFESA, para o fim de ser declarado nulo o Auto de Infração em questão. Na remota hipótese do não acolhimento dos argumentos espostos na presente defesa, requer que seja observado o disposto no art. 22, § 1º, II da Resolução nº 25, de 25/04/2008 e art. 58, § 1º, II da Instrução Normativa nº 08, de 06/06/2008, no intuito de mitigar o valor da multa a ser imposta, haja vista que a ECT tem adotado as providências e ações necessárias no sentido de evitar, bem como coibir, o surgimento de ocorrências como a aqui discutida.
- A **Decisão de Primeira Instância (DC1)** após cotejo integral de todos argumentos para com os elementos dos autos entendeu que as argumentações da autuada não evidenciaram elementos probatórios capazes de elidir a aplicação de penalidade. Especificou ainda que:

a) a Autuada não apresentou provas de que o material foi devidamente classificado, embalado e marcado como determinado pela legislação. Cumpre informar que o produto apresentado para embarque, SOLUÇÃO AQUOSA DE FORMALDEÍDO, **está classificado como artigo perigoso**, e classificado como artigo perigoso para o

transporte aéreo - UN 1198 segundo o DOC 9284 AN905, Tabela 3-1 Dangerous Goods List, pertencente a Classe 3 - Líquido Inflamável, com risco subsidiário 8 - Material Corrosivo.

b) Não prospera a alegação da Autuada de que a responsabilidade pela classificação e embalagem do objeto como perigoso é do remetente, uma vez que tal responsabilidade recai sobre o **expedidor**, em conformidade com a seção 175.17 do RBAC 175:

175.17 Responsabilidades do expedidor de carga aérea

(a) E obrigação do expedidor de carga aérea ou de qualquer pessoa que atue como intermediário entre o expedidor e o operador de transporte aéreo assegurar que todos os requisitos aplicáveis ao transporte aéreo

• , sejam cumpridos, entre eles certificar-se de que o artigo perigoso oferecido para o transporte aéreo:

(1) não está proibido para o transporte aéreo; e

(2) está adequadamente identificado, classificado, embalado, marcado, etiquetado e documentado, de acordo com as Partes 1, 2, 5.4, § e Anexos do DOC. 9284-AN/905 e da IS 175-001.

(b) O expedidor responde pela exatidão das indicações e declarações constantes do conhecimento aéreo e pelos danos que, em consequência de suas declarações irregulares, inexatas ou incompletas, vier a causar ao transportador ou a terceiros.

(c) Caso, devido à natureza de seu conteúdo precedente, as embalagens vazias que não tenham sido limpas possam conter algum risco, elas serão hermeticamente fechadas e tratadas de acordo com o risco que contêm.

(d) O expedidor deve providenciar o transporte terrestre de artigo perigoso em conformidade com as pertinentes normas da Agência Nacional de Transportes Terrestres - ANTT.

(e) Ao preparar cada embalagem de artigos perigosos, o expedidor deve:

(1) observar o conjunto de requisitos de embalagem adequado ao tipo que será utilizado; e

(2) assegurar-se de invalidar todas as etiquetas e marcas de artigos perigosos não apropriadas antes de voltar a utilizar a embalagem ou sobre embalagem autorizada.(g.n.)

3.3. Assim, condenou a interessada à sanção de multa no valor de R\$ 14.000,00 (Quatorze mil reais), de acordo com a conduta apurada, haja vista a ausência de circunstâncias atenuantes e agravantes previstas nos parágrafos primeiro e segundo, conforme consulta ao SIGEC, considerado o rol taxativo fincado no art. 22 da referida Resolução

3.4. Eis que chegam os autos conclusos à análise deste relator em 16/10/2017.

3.5. **É o relato.**

4. VOTO

4.1. Conheço do Recurso, vez que presentes seus pressupostos de admissibilidade e tempestividade, recebendo-o em efeito suspensivo (art. 16 da Res. ANAC 25/2008).

5. PRELIMINARES

5.1. **Da Regularidade Processual** - Considerando atos processuais e documentos constantes dos autos, acuso regularidade processual nos presentes autos visto que preservados os direitos constitucionais inerentes ao interessado, bem como respeitados os princípios da Administração Pública, em especial a ampla defesa e o contraditório. Julgo o processo apto à decisão de segunda instância administrativa por parte desta ASJIN.

6. FUNDAMENTAÇÃO - MÉRITO E ANÁLISE DAS ALEGAÇÕES DO INTERESSADO

7. MÉRITO

7.1. **Quanto à Fundamentação da Matéria: expedir artigo perigoso não-declarado** - A peça da DC1, devidamente motivada e fundamentada pelo decisor competente, confirmou, de forma clara e objetiva, a materialidade infracional imputada ao interessado pela fiscalização. Restou comprovado, conforme laudo pericial, o qual expõe que a Autuada entregou uma carga composta de 06 (seis) volumes para a empresa AIR BRASIL LINHAS AÉREAS LTDA. A carga vazou e molhou o assoalho da aeronave e foi constatado que o produto era SOLUÇÃO AQUOSA DE FORMALDEÍDO e classificado como artigo perigoso para o transporte aéreo- UN 1198 segundo o DOC 9284 AN905, Tabela 3-1 Dangerous Goods List, pertencente a Classe 3 - Líquido Inflamável, com risco subsidiário 8 - Material Corrosivo.

7.2. Ainda de acordo com o referido relatório, a carga não foi devidamente identificada e documentada. A infração foi capitulada no artigo 299, inciso II do CBAer, que dispõe:

Art. 299. Será aplicada multa de (vetado) até 1.000 (mil) valores de referência, ou de suspensão ou cassação de quaisquer certificados de matrícula, habilitação, concessão, autorização, permissão ou homologação

expedidos segundo as regras deste Código, nos seguintes casos:

(...)

11 - execução de serviços aéreos de forma a comprometer a ordem ou a segurança pública, ou com violação das normas de segurança dos transportes;

Ainda o RBAC 175 - TRANSPORTE DE ARTIGOS PERIGOSOS EM AERONAVES CIVIS cita:

175.5 Limitações e proibições

(...);

(i) Com exceção do disposto abaixo, os artigos perigosos estão proibidos de serem transportados pelos Correios pelo modal aéreo.

(1) amostras de material para exames médicos laboratoriais, desde que estejam devidamente classificadas, embaladas e marcadas:

7.3. Desta forma, é clara a norma quanto à obrigatoriedade do expedidor de carga aérea ou de qualquer pessoa que atue como intermediário entre o expedidor e o operador de transporte aéreo assegurar que todos os requisitos aplicáveis ao transporte aéreo sejam cumpridos, entre eles certificar-se de que o artigo perigoso oferecido para o transporte aéreo esteja adequadamente identificado, classificado, embalado, marcado, etiquetado e documentado.

7.4. Por fim, cabe ressaltar que o Código Brasileiro de Aeronáutica dispõe, em seu art. 295, Inciso II, que a multa será imposta de acordo com a gravidade da infração. Nesse sentido, a Resolução nº ANAC 25/2008, que dispõe sobre o processo administrativo para a apuração de infrações e aplicação de penalidades no âmbito da competência da Agência Nacional de Aviação Civil determina em seu art. 22 que sejam consideradas as circunstâncias agravantes e atenuantes na imposição da penalidade pecuniária.

8. DAS ALEGAÇÕES DA INTERESSADA:

8.1. Alega, que não restou comprovado por parte desta Agência a nocividade do material

transportado, haja vista a inexistência de periculosidade na substância conforme Laudo de Perícia Criminal Federal nº 0094/201-SETEC/SR/DPF/BA., pois, julga, restar descaracterizada a infração às regras de aviação civil e que tal substância não é capaz de causar dependência física ou psíquica.

8.2. Suscita, então, a revisão da Decisão exarada pela Superintendência de Segurança Operacional para excluir a multa aplicada por intermédio do Auto de Infração nº. 04943/2011.

8.3. Requer, ainda, a minoração do valor da multa aplicada em sede de Primeira Instância Administrativa com o fim de atender ao princípio da razoabilidade e da proporcionalidade, caso não seja entendido a revisão dessa.

8.4. Tais alegações não merecem prosperar, haja visto que em hipótese alguma, a ECT não poderia aceitar o produto em questão e oferecer a carga ao operador aéreo **Air Brasil Linhas Aéreas Ltda.** sem se certificar que o produto tratava-se ou não de artigo perigoso e deveria informar corretamente ao operador aéreo o tipo de mercadoria a ser transportada.

8.5. Tal procedimento foi efetuado em gritante desconformidade com os padrões de segurança, tendo que a ECT realizou Reunião com o objetivo de elaborar relatório apresentando o diagnóstico da situação de postagens de encomendas com conteúdo proibido e outros materiais que colocam em risco a segurança das operações postais e apresenta alternativas para mitigação dessas não conformidades, em 03 de fevereiro de 2011, tendo como precursor o Ofício nº 30/2011/550- ANAC - Ocorrência Envolvendo Artigos Perigosos.

8.6. Mesmo antes deste expediente, já havia padrões previamente determinados para o despacho de todo o tipo de carga, em especial, a carga perigosa que tem um tratamento diferenciado no recebimento (aceite), por parte da empresa aérea, devendo obedecer requisitos como:

1. Embalagem Adequada (a carga em questão não tinha embalagem apropriada)
2. Etiqueta de Risco (a embalagem não possui a etiqueta)
3. Identificação do produto e classe de risco (a embalagem não tem qualquer informação de que produto se trata)
4. Nota fiscal para acompanhamento e discriminação do produto (não foi emitida na origem como também os Correios não exigiu no momento do embarque.)
5. Informação ao comandante da Aeronave sobre o carregamento de produtos perigosos (mediante um documento chamado NOTOC.)

8.7. Em resumo: A carga recebida pela Empresa Correios deveria estar devidamente identificada com embalagem adequada, nº da ONU, identificação do produto com o respectivo nome etiqueta, risco e classe, como determina o manual de cargas perigosas (IATA) e por fim, informar ao comandante por meio de NOTOC que tipo de produto ele está carregando."

8.8. Quanto à alegação de que a ANAC não provou o risco do material transportado, evidencia-se exatamente o oposto, tendo como base o laudo Pericial nº. 0094/2011 - SETEC/SR/DPF/BA, (fls. 13 à 17), no qual foi confirmado por Espectroscopia na região do infravermelho (FTIR), utilizando espectrofotômetro Nicolet modelo 380, equipado com acessório de ATR (do inglês Attenued Total Reflectance - Refletância Total Atenuada). Nessas análises, foram observadas, para todas as amostras, bandas de absorção características de soluções de **FORMALDEÍDO**. Nesses exames, verificou-se a presença de **FORMALDEÍDO** em TODAS as amostras analisadas, pelo padrão apresentado nas detecções espectrométricas. Além de **FORMALDEÍDO**, foram detectadas nas amostras analisadas as presenças de **METANOL** e **DIMETOXIMETANO**, ou seja, material classificado como artigo perigoso, e classificado como artigo perigoso para o transporte aéreo - UN 1198 segundo o DOC 9284 AN905, Tabela 3-1 Dangerous Goods List, pertencente a Classe 3 - Líquido Inflamável, com risco subsidiário 8 - Material Corrosivo.

8.9. Isso posto, conclui-se que as alegações do interessado não foram eficazes para afastar a aplicação da sanção administrativa. Resta configurada a infração apontada pelo AI de nº 4943/2011.

9. QUESTÕES DE FATO (QUAESTIO FACTI)

9.1. Conforme consta dos autos, a interessada fora autuada por expedir artigo perigoso não-declarado, infringindo a seção 175.5 (i) do RBAC 175, bem como o artigo 299, inciso II da Lei n.º 7.565/1.986 (Código Brasileiro de Aeronáutica - CBAer).

10. DA DOSIMETRIA DA SANÇÃO

10.1. Verificada a regularidade da ação fiscal, há que se verificar o valor da multa aplicada como sanção administrativa ao ato infracional imputado, relativa ao Auto de Infração nº 4943/2011.

10.2. O Código Brasileiro de Aeronáutica dispõe no art. 295 que a multa será imposta de acordo com a gravidade da infração. Nesse sentido, a Resolução ANAC nº 25, de 25 de abril de 2008, determina em seu art. 22 que sejam consideradas as circunstâncias agravantes e atenuantes na imposição da penalidade pecuniária.

10.3. Com relação à dosimetria da penalidade pecuniária para a infração cometida por pessoa jurídica, em consonância com o Inciso II, do Artigo 299, do Código Brasileiro de Aeronáutica e de acordo com o Anexo II, da tabela de infrações, da Resolução ANAC nº 25/2008, item II quanto à execução de serviços aéreos de forma a comprometer a ordem ou a segurança pública, ou com violação das normas de segurança dos transportes, é a de aplicação de multa no valor de R\$ 8.000,00 (oito mil reais) no patamar mínimo, R\$ 14.000,00 (quatorze mil reais) no patamar médio e R\$ 20.000,00 (vinte mil reais) no patamar máximo.

10.4. **ATENUANTES** - No caso em tela, não se vislumbra a possibilidade de aplicação de qualquer condição atenuante dentre aquelas dispostas nos incisos do §1º do artigo 22 da Resolução nº 25/08, tendo em vista a existência de aplicação de penalidade no último ano.

10.5. **AGRAVANTES** - Do mesmo modo, não se identifica a possibilidade de aplicação de condição agravante dentre aquelas dispostas nos incisos do §2º do artigo 22 da Resolução nº 25/08.

10.6. Nos casos em que **não há agravantes, nem atenuantes, ou quando estas se compensem**, deve ser aplicado o valor médio da tabela em anexo à Resolução nº 25/2008.

10.7.

11. DA SANÇÃO A SER APLICADA EM DEFINITIVO:

11.1. A Instrução Normativa IN ANAC nº 08/2008, dispõe, em seu art. 57, que se deve partir do valor intermediário constante das tabelas de multas anexas à Resolução ANAC nº 25/2008, para, *então*, diminuir ou aumentar o valor conforme a existência de circunstâncias atenuantes ou agravantes.

11.2. Por tudo o exposto, considerando a inexistência de circunstâncias atenuantes ou agravantes, **entendo que deva ser mantida a sanção aplicada pela decisão de primeira instância administrativa, no valor de R\$ 14.000,00 (quatorze mil reais).**

12. **CONCLUSÃO**

12.1. Pelo exposto na integralidade desta análise, voto por conhecer e **NEGAR PROVIMENTO** ao recurso, **MANTENDO** a multa aplicada em Primeira Instância Administrativa no valor de **R\$ 14.000,00 (quatorze mil reais)**.

12.2. É o voto deste Relator.



Documento assinado eletronicamente por **Eduardo Viana Barbosa, Analista Administrativo**, em 11/01/2018, às 14:45, conforme horário oficial de Brasília, com fundamento no art. 6º, § 1º, do [Decreto nº 8.539, de 8 de outubro de 2015](#).



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SEI nº 1179778

	SIGEC :: SISTEMA INTEGRADO DE GESTÃO DE CRÉDITOS
	Atalhos do Sistema: Menu Principal

:: MENU PRINCIPAL

Extrato de Lançamentos

Nome da Entidade: EMPRESA BRASILEIRA DE CORREIOS E TELEGRAFOS

Nº ANAC: 30012870552

CNPJ/CPF: 34028316000103

 CADIN: Sim

Div. Ativa: Sim - EF

Tipo Usuário: Integral

 UF: DF

Receita	NºProcesso	Processo SIGAD	Data Vencimento	Data Infração	Valor Original	Data do Pagamento	Valor Pago	Valor Utilizado	Chave	Situação	Valor Débito (R\$)
9000					0,00	16/03/2016	132,00	0,00			0,00
9000					0,00	16/03/2016	132,00	0,00			0,00
2081	642701144	60800200471201193	29/08/2014	15/09/2010	R\$ 8.000,00		0,00	0,00		DA - CD - EF	12.654,40
2081	645938152	60800203068201116	20/03/2015	29/01/2011	R\$ 14.000,00		0,00	0,00		RE2	0,00
2081	652380153	00065154046201235	05/02/2016	20/01/2011	R\$ 8.000,00	16/03/2016	9.268,00	9.136,00		PG	0,00
2081	652575160	00065119720201235	26/02/2016	18/05/2012	R\$ 8.000,00	16/03/2016	8.713,60	8.581,60		PG	0,00
2081	658635170	00058053933201448	17/02/2017	20/02/2014	R\$ 10.000,00		0,00	0,00		PU1	12.681,99
2081	658636178	00058053925201400	17/02/2017	20/02/2014	R\$ 10.000,00		0,00	0,00		PU1	12.681,99
Total devido em 24-10-2017 (em reais):											38.018,38

Legenda do Campo Situação

DC1 - Decidido em 1ª instância mas ainda aguardando ciência	PU3 - Punido 3ª instância
PU1 - Punido 1ª Instância	IT3 - Punido pq recurso em 3ª instância foi intempestivo
RE2 - Recurso de 2ª Instância	RAN - Processo em revisão por iniciativa da ANAC
ITD - Recurso em 2ª instância intempestivo , mas ainda aguardando ciência do infrator	CD - CADIN
DC2 - Decidido em 2ª instância mas aguardando ciência	EF - EXECUÇÃO FISCAL
DG2 - Deligências por iniciativa da 2ª instância	PP - PARCELADO PELA PROCURADORIA
CAN - Cancelado	GPE - GARANTIA DA EXECUÇÃO POR PENHORA REGULAR E SUFICIENTE
PU2 - Punido 2ª instância	SDE - SUSPENSÃO DA EXIGIBILIDADE POR DEPÓSITO JUDICIAL
IT2 - Punido pq recurso em 2ª foi intempestivo	SDJ - SUSPENSÃO DA EXIGIBILIDADE POR DECISÃO JUDICIAL
RE3 - Recurso de 3ª instância	GDE - Garantia da Execução por Depósito Judicial
ITT - Recurso em 3ª instância intempestivo , mas ainda aguardando ciência do infrator	PC - PARCELADO
IN3 - Recurso não foi admitido a 3ª instância	PG - Quitado
AD3 - Recurso admitido em 3ª instância	DA - Dívida Ativa
DC3 - Decidido em 3ª instância mas aguardando ciência	PU - Punido
DG3 - Deligências por iniciativa da 3ª instância	RE - Recurso
RVT - Revisto	RS - Recurso Superior
RVS - Processo em revisão por iniciativa do interessado	CA - Cancelado
INR - Revisão a pedido ou por iniciativa da anac não foi admitida	PGDJ - Quitado Depósito Judicial Convertido em Renda

Registro 1 até 8 de 8 registros

Página: [1] [Ir] [Reg]

CHAPTER 3.2

LIST OF DANGEROUS GOODS

3.2.1 **Table A: List of dangerous goods in numerical order**

See Volume II

3.2.2 **Table B: List of dangerous goods in alphabetical order**

See Volume II

3.2.3 **Table C: List of dangerous goods accepted for carriage in tank vessels in numerical order**

Explanations concerning Table C:

As a rule, each row of Table C of this Chapter deals with the substance(s) covered by a specific UN number or identification number. However, when substances belonging to the same UN number or identification number have different chemical properties, physical properties and/or carriage conditions, several consecutive rows may be used for that UN number or identification number.

Each column of Table C is dedicated to a specific subject as indicated in the explanatory notes below. The intersection of columns and rows (cell) contains information concerning the subject treated in that column, for the substance(s) of that row:

- The first four cells identify the substance(s) belonging to that row;
- The following cells give the applicable special provisions, either in the form of complete information or in coded form. The codes cross-refer to detailed information that is to be found in the numbers indicated in the explanatory notes below. An empty cell means either that there is no special provision and that only the general requirements apply, or that the carriage restriction indicated in the explanatory notes is in force.

The applicable general requirements are not referred to in the corresponding cells.

Explanatory notes for each column:

Column (1) “UN number/identification number”

Contains the UN number or identification number:

- of the dangerous substance if the substance has been assigned its own specific UN number or identification number, or
- of the generic or n.o.s. entry to which the dangerous substances not mentioned by name shall be assigned in accordance with the criteria (“decision trees”) of Part 2.

Column (2) “Name and description”

Contains, in upper case characters, the name of the substance, if the substance has been assigned its own specific UN number or identification

number or of the generic or n.o.s. entry to which the dangerous substances have been assigned in accordance with the criteria (“decision trees”) of Part 2. This name shall be used as the proper shipping name or, when applicable, as part of the proper shipping name (see 3.1.2 for further details on the proper shipping name).

A descriptive text in lower case characters is added after the proper shipping name to clarify the scope of the entry if the classification or carriage conditions of the substance may be different under certain conditions.

Column (3a)	“Class”
	Contains the number of the Class, whose heading covers the dangerous substance. This Class number is assigned in accordance with the procedures and criteria of Part 2.
Column (3b)	“Classification code”
	Contains the classification code of the dangerous substance.
	<ul style="list-style-type: none">– For dangerous substances of Class 2, the code consists of a number and one or more letters representing the hazardous property group, which are explained in 2.2.2.1.2 and 2.2.2.1.3.– For dangerous substances or articles of Classes 3, 4.1, 6.1, 8 and 9, the codes are explained in 2.2.x.1.2.¹
Column (4)	“Packing group”
	Contains the packing group number(s) (I, II or III) assigned to the dangerous substance. These packing group numbers are assigned on the basis of the procedures and criteria of Part 2. Certain substances are not assigned to packing groups.
Column (5)	“Danger”
	This column contains information concerning the hazards inherent in the dangerous substance. These hazards are included on the basis of the danger labels of Table A, column (5). In the case of a chemically unstable substance, the code ‘unst.’ is added to the information.
	In the case of a substance or mixture hazardous to the aquatic environment, the code ‘N1’, ‘N2’ or ‘N3’ is added to the information.
	In the case of a substance or mixture with CMR properties, the code ‘CMR’ is added to the information.
	In the case of a substance or mixture that floats on the water surface, does not evaporate and is not readily soluble in water or that sinks to the bottom of the water and is not readily soluble, the code ‘F’ (standing for

¹ *x = the Class number of the dangerous substance or article, without dividing point if applicable.*

‘Floater’) or ‘S’ (standing for ‘Sinker’), respectively, is added to the information.

Column (6)	“Type of tank vessel” Contains the type of tank vessel: G, C or N.
Column (7)	“Cargo tank design” Contains information concerning the design of the cargo tank: 1 Pressure cargo tank 2 Closed cargo tank 3 Open cargo tank with flame arrester 4 Open cargo tank
Column (8)	“Cargo tank type” Contains information concerning the cargo tank type. 1 Independent cargo tank 2 Integral cargo tank 3 Cargo tank with walls distinct from the outer hull
Column (9)	“Cargo tank equipment” Contains information concerning the cargo tank equipment. 1 Refrigeration system 2 Possibility of cargo heating 3 Water-spray system 4 Cargo heating system on board
Column (10)	“Opening pressure of high-velocity vent valve in kPa” Contains information concerning the opening pressure of the high-velocity vent valve in kPa.
Column (11)	“Maximum degree of filling (%)” Contains information concerning the maximum degree of filling of cargo tanks as a percentage.
Column (12)	“Relative density” Contains information concerning the relative density of the substance at 20° C. Data concerning the density are for information only.

Column (13)	<p>“Type of sampling device”</p> <p>Contains information concerning the prescribed type of sampling device.</p> <p>1 Closed sampling device</p> <p>2 Partly closed sampling device</p> <p>3 Open sampling device</p>
Column (14)	<p>“Pump-room below deck permitted”</p> <p>Contains an indication of whether a pump-room is permitted below deck.</p> <p>Yes pump-room below deck permitted</p> <p>No pump-room below deck not permitted</p>
Column (15)	<p>“Temperature class”</p> <p>Contains the temperature class of the substance.</p>
Column (16)	<p>“Explosion group”</p> <p>Contains the explosion group of the substance.</p>
Column (17)	<p>“Anti-explosion protection required”</p> <p>Contains a code referring to protection against explosions.</p> <p>Yes anti-explosion protection required</p> <p>No anti-explosion protection not required</p>
Column (18)	<p>“Equipment required”</p> <p>This column contains the alphanumeric codes for the equipment required for the carriage of the dangerous substance (see 8.1.5).</p>
Column (19)	<p>“Number of blue cones/lights”</p> <p>This column contains the number of cones/lights which should constitute the marking of the vessel during the carriage of this dangerous substance or article.</p>
Column (20)	<p>“Additional requirements/Remarks”</p> <p>This column contains the additional requirements or remarks applicable to the vessel.</p> <p>These additional requirements or remarks are:</p> <ol style="list-style-type: none"> 1. Anhydrous ammonia is liable to cause stress crack corrosion in cargo tanks and cooling systems constructed of carbon-manganese steel or nickel steel.

In order to minimize the risk of stress crack corrosion the following measures shall be taken:

- (a) Where carbon-manganese steel is used, cargo tanks, pressure vessels of cargo refrigeration systems and cargo piping shall be constructed of fine-grained steel having a specified minimum yield stress of not more than 355 N/mm². The actual yield stress shall not exceed 440 N/mm². In addition, one of the following construction or operational measures shall be taken:
 - .1 Material with a low tensile strength ($R_m < 410 \text{ N/mm}^2$) shall be used; or
 - .2 Cargo tanks, etc., shall undergo a post-weld heat treatment for the purpose of stress relieving; or
 - .3 The transport temperature shall preferably be maintained close to the evaporation temperature of the cargo of -33° C, but in no case above -20° C; or
 - .4 Ammonia shall contain not less than 0.1 % water, by mass.
- (b) When carbon-manganese steel with yield stress values higher than those referred to in (a) above is used, the completed tanks, pipe sections, etc., shall undergo a post-weld heat treatment for the purpose of stress relieving.
- (c) Pressure vessels of the cargo refrigeration systems and the piping systems of the condenser of the cargo refrigeration system constructed of carbon-manganese steel or nickel steel shall undergo a post-weld heat treatment for the purpose of stress relieving.
- (d) The yield stress and the tensile strength of welding consumables may exceed only by the smallest value possible the corresponding values of the tank and piping material.
- (e) Nickel steels containing more than 5 % nickel and carbon-manganese steel which are not in compliance with the requirements of (a) and (b) above may not be used for cargo tanks and piping systems intended for the transport of this substance.
- (f) Nickel steels containing not more than 5 % nickel may be used if the transport temperature is within the limits referred to in (a) above.

- (g) The concentration of oxygen dissolved in the ammonia shall not exceed the values given in the table below:

t in °C	O ₂ in %
-30 and below	0.90
-20	0.50
-10	0.28
0	0.16
10	0.10
20	0.05
30	0.03

2. Before loading, air shall be removed and subsequently kept away to a sufficient extent from the cargo tanks and the accessory cargo piping by the means of inert gas (see also 7.2.4.18).
3. Arrangements shall be made to ensure that the cargo is sufficiently stabilized in order to prevent a reaction at any time during carriage. The transport document shall contain the following additional particulars:
 - (a) Name and amount of inhibitor added;
 - (b) Date on which inhibitor was added and expected duration of effectiveness under normal conditions;
 - (c) Any temperature limits having an effect on the inhibitor.

When stabilization is ensured solely by blanketing with an inert gas it is sufficient to mention the name of the inert gas used in the transport document.

When stabilization is ensured by another measurement, e.g. the special purity of the substance, this measurement shall be mentioned in the transport document.

4. The substance shall not be allowed to solidify; the transport temperature shall be maintained above the melting point. In instances where cargo heating installations are required, they must be so designed that polymerisation through heating is not possible in any part of the cargo tank. Where the temperature of steam-heated coils could give rise to overheating, lower-temperature indirect heating systems shall be provided.
5. This substance is liable to clog the vapour pipe and its fittings. Careful surveillance should be ensured. If a close-type tank vessel is required for the carriage of this substance the vapour pipe shall conform to 9.3.2.22.5 (a) (i), (ii), (iv), (b), (c) or (d) or to 9.3.3.22.5 (a) (i), (ii), (iv), (b), (c) or (d). This requirement does not apply when the cargo tanks and the corresponding piping are inerted in accordance with 7.2.4.18 nor when protection against explosions is not required in column (17) and when flame-arresters have not been installed.

6. When external temperatures are below or equal to that indicated in column (20), the substance may only be carried in tank vessels equipped with a possibility of heating the cargo.

In addition, in the event of carriage in a closed-type vessel, if the tank vessel:

- is fitted out in accordance with 9.3.2.22.5 (a) (i) or (d) or 9.3.3.22.5 (a) (i) or (d), it shall be equipped with pressure/vacuum valves capable of being heated; or
- is fitted out in accordance with 9.3.2.22.5 (a) (ii), (v), (b) or (c) or 9.3.3.22.5 (a) (ii), (v), (b) or (c), it shall be equipped with heatable vapour pipes and heatable pressure/vacuum valves; or
- is fitted out in accordance with 9.3.2.22.5 (a) (iii) or (iv) or 9.3.3.22.5 (a) (iii) or (iv), it shall be equipped with heatable vapour pipes and with heatable pressure/vacuum valves and heatable flame-arresters.

The temperature of the vapour pipes, pressure/vacuum valves and flame-arresters shall be kept at least above the melting point of the substance.

7. If a closed-type tank vessel is required to carry this substance or if the substance is carried in a closed-type tank vessel, if this vessel:

- is fitted out in accordance with 9.3.2.22.5 (a) (i) or (d) or 9.3.3.22.5 (a) (i) or (d), it shall be equipped with heatable pressure/vacuum valves, or
- is fitted out in accordance with 9.3.2.22.5 (a) (ii), (v), (b) or (c) or 9.3.3.22.5 (a) (ii), (v), (b) or (c), it shall be equipped with heatable vapour pipes and heatable pressure/vacuum valves, or
- is fitted out in accordance with 9.3.2.22.5 (a) (iii) or (iv) or 9.3.3.22.5 (a) (iii) or (iv), it shall be equipped with heatable vapour pipes and with heatable pressure/vacuum valves and heatable flame-arresters.

The temperature of the vapour pipes, pressure/vacuum valves and flame-arresters shall be kept at least above the melting point of the substance.

8. Double-hull spaces, double bottoms and heating coils shall not contain any water.
9. (a) While the vessel is underway, an inert-gas pad shall be maintained in the ullage space above the liquid level.
- (b) Cargo piping and vent lines shall be independent of the corresponding piping used for other cargoes.
- (c) Safety valves shall be made of stainless steel.

10. *(Reserved)*
11. (a) Stainless steel of type 416 or 442 and cast iron shall not be used for cargo tanks and pipes for loading and unloading.
- (b) The cargo may be discharged only by deep-well pumps or pressure inert gas displacement. Each cargo pump shall be arranged to ensure that the substance does not heat significantly if the pressure discharge line from the pump is shut off or otherwise blocked.
- (c) The cargo shall be cooled and maintained at temperatures below 30° C.
- (d) The safety valves shall be set at a pressure of not less than 550 kPa (5.5 bar) gauge pressure. Special authorization is required for the maximum setting pressure.
- (e) While the vessel is underway, a nitrogen pad shall be maintained in the ullage space above the cargo (see also 7.2.4.18). An automatic nitrogen supply system shall be installed to prevent the pressure from falling below 7 kPa (0.07 bar) gauge within the cargo tank in the event of a cargo temperature fall due to ambient temperature conditions or to some other reason. In order to satisfy the demand of the automatic pressure control a sufficient amount of nitrogen shall be available on board. Nitrogen of a commercially pure quality of 99.9 %, by volume, shall be used for padding. A battery of nitrogen cylinders connected to the cargo tanks through a pressure reduction valve satisfies the intention of the expression “automatic” in this context.
- The required nitrogen pad shall be such that the nitrogen concentration in the vapour space of the cargo tank is not less than 45 % at any time.
- (f) Before loading and while the cargo tank contains this substance in a liquid or gaseous form, it and the corresponding piping shall be inerted with nitrogen.
- (g) The water-spray system shall be fitted with remote-control devices which can be operated from the wheelhouse or from the control station, if any.
- (h) Transfer arrangements shall be provided for emergency transfer of ethylene oxide in the event of an uncontrollable self-reaction.
12. (a) The substance shall be acetylene free.
- (b) Cargo tanks which have not undergone appropriate cleaning shall not be used for the carriage of these substances if one of the previous three cargoes consisted of a substance known to promote polymerisation, such as:

- .1 mineral acids (e.g. sulphuric acid, hydrochloric acid, nitric acid);
- .2 carboxylic acids and anhydrides (e.g. formic acid, acetic acid);
- .3 halogenated carboxylic acids (e.g. chloroacetic acid);
- .4 sulphonic acids (e.g. benzene sulphonic acid);
- .5 caustic alkalis (e.g. sodium hydroxide, potassium hydroxide);
- .6 ammonia and ammonia solutions;
- .7 amines and amine solutions;
- .8 oxidizing substances.

- (c) Before loading, cargo tanks and their piping shall be efficiently and thoroughly cleaned so as to eliminate all traces of previous cargoes, except when the last cargo was constituted of propylene oxide or a mixture of ethylene oxide and propylene oxide. Special precautions shall be taken in the case of ammonia in cargo tanks built of steel other than stainless steel.
- (d) In all cases the efficiency of the cleaning of cargo tanks and their piping shall be monitored by means of appropriate tests or inspections to check that no trace of acid or alkaline substance remains that could present a danger in the presence of these substances.
- (e) The cargo tanks shall be entered and inspected prior to each loading of these substances to ensure freedom from contamination, heavy rust deposits or visible structural defects.

When these cargo tanks are in continuous service for these substances, such inspections shall be performed at intervals of not more than two and a half years.

- (f) Cargo tanks which have contained these substances may be reused for other cargoes once they and their piping have been thoroughly cleaned by washing and flushing with an inert gas.
- (g) Substances shall be loaded and unloaded in such a way that there is no release of gas into the atmosphere. If gas is returned to the shore installation during loading, the gas return system connected to the tank containing that substance shall be independent from all other cargo tanks.
- (h) During discharge operations, the pressure in the cargo tanks shall be maintained above 7 kPa (0.07 bar) gauge.

- (i) The cargo shall be discharged only by deep-well pumps, hydraulically operated submerged pumps or pressure inert gas displacement. Each cargo pump shall be arranged to ensure that the substance does not heat significantly if the pressure discharge line from the pump is shut off or otherwise blocked.
- (j) Each cargo tank carrying these substances shall be ventilated by a system independent from the ventilation systems of other cargo tanks carrying other substances.
- (k) Loading pipes used for these substances shall be marked as follows:

“To be used only for the transfer of alkylene oxide.”

- (l) *(Reserved)*
- (m) No air shall be allowed to enter the cargo pumps and cargo piping system while these substances are contained within the system.
- (n) Before the shore connections are disconnected, piping containing liquids or gas shall be depressurised at the shore link by means of appropriate devices.
- (o) The piping system for cargo tanks to be loaded with these substances shall be separate from piping system for all other cargo tanks, including empty cargo tanks. If the piping system for the cargo tanks to be loaded is not independent, separation shall be accomplished by the removal of spool pieces, shut-off valves, other pipe sections and by fitting blank flanges at these locations. The required separation applies to all liquid pipes and vapour vent lines and any other connections which may exist such as common inert gas supply lines.
- (p) These substances may be carried only in accordance with cargo handling plans that have been approved by a competent authority.

Each loading arrangement shall be shown on a separate cargo handling plan. Cargo handling plans shall show the entire cargo piping system and the locations for installations of blank flanges needed to meet the above piping separation requirements. A copy of each cargo handling plan shall be kept on board. Reference to the approved cargo handling plans shall be included in the certificate of approval.

- (q) Before loading of these substances and before carriage is resumed a qualified person approved by the competent authority shall certify that the prescribed separation of the piping has been effected; this certificate shall be kept on board. Each connection between a blank flange and a shut-off valve in the piping shall be fitted with a sealed wire to prevent the flange from being disassembled inadvertently.

- (r) During the voyage, the cargo shall be covered with nitrogen. An automatic nitrogen make-up system shall be installed to prevent the cargo tank pressure from falling below 7 kPa (0.07 bar) gauge in the event of a cargo temperature fall due to ambient temperature conditions or to some other reason. Sufficient nitrogen shall be available on board to satisfy the demand of automatic pressure control. Nitrogen of commercially pure quality of 99.9 %, by volume, shall be used for padding. A battery of nitrogen cylinders connected to the cargo tanks through a pressure reduction valve satisfies the intention of the expression “automatic” in this context.
- (s) The vapour space of the cargo tanks shall be checked before and after each loading operation to ensure that the oxygen content is 2 %, by volume, or less.
- (t) Loading flow

The loading flow (L_R) of cargo tank shall not exceed the following value:

$$L_R = 3600 \times U/t \text{ (m}^3\text{/h)}$$

In this formula:

U = the free volume (m^3) during loading for the activation of the overflow prevention system;

T = the time (s) required between the activation of the overflow prevention system and the complete stop of the flow of cargo into the cargo tank;

The time is the sum of the partial times needed for successive operations, e.g. reaction time of the service personnel, the time needed to stop the pumps and the time needed to close the shut-off valves;

The loading flow shall also take account of the design pressure of the piping system.

13. If no stabilizer is supplied or if the supply is inadequate, the oxygen content in the vapour phase shall not exceed 0.1 %. Overpressure must be constantly maintained in cargo tanks. This requirement applies also to voyages on ballast or empty with uncleaned cargo tanks between cargo transport operations.
14. The following substances may not be carried under these conditions:
- substances with self-ignition temperatures ≤ 200 °C;
 - substances with a flash point < 23 °C and an explosion range > 15 percentage points;

- mixtures containing halogenated hydrocarbons;
 - mixtures containing more than 10 % benzene;
 - substances and mixtures carried in a stabilized state.
15. Provision shall be made to ensure that alkaline or acidic substances such as sodium hydroxide solution or sulphuric acid do not contaminate this cargo.
 16. If there is a possibility of a dangerous reaction such as polymerisation, decomposition, thermal instability or evolution of gases resulting from local overheating of the cargo in either the cargo tank or associated piping system, this cargo shall be loaded and carried adequately segregated from other substances the temperature of which is sufficiently high to initiate such reaction. Heating coils inside cargo tanks carrying this substance shall be blanked off or secured by equivalent means.
 17. The melting point of the cargo shall be shown in the transport documents.
 18. *(Reserved)*
 19. Provision shall be made to ensure that the cargo does not come into contact with water. The following additional requirements apply:

Carriage of the cargo is not permitted in cargo tanks adjacent to slop tanks or cargo tanks containing ballast water, slops or any other cargo containing water. Pumps, piping and vent lines connected to such tanks shall be separated from similar equipment of tanks carrying these substances. Pipes from slop tanks or ballast water pipes shall not pass through cargo tanks containing this cargo unless they are encased in a tunnel.
 20. The maximum permitted transport temperature given in column (20) shall not be exceeded.
 21. *(Reserved)*
 22. The relative density of the cargo shall be shown in the transport document.
 23. The instrument for measuring the pressure of the vapour phase in the cargo tank shall activate the alarm when the internal pressure reaches 40 kPa (0.4 bar). The water-spray system shall immediately be activated and remain in operation until the internal pressure drops to 30 kPa (0.3 bar).
 24. Substances having a flash-point above 61 °C which are handed over for carriage or which are carried heated within a limiting range of 15 K below their flash-point shall be carried under the conditions of substance number 9001.
 25. Type 3 cargo tank may be used for the carriage of this substance provided that the construction of the cargo tank has been accepted

by a recognized classification society for the maximum permitted transport temperature.

26. Type 2 cargo tank may be used for the carriage of this substance provided that the construction of the cargo tank has been accepted by a recognized classification society for the maximum permitted transport temperature.
27. The requirements of 3.1.2.8.1 are applicable.
28. (a) When UN 2448 SULPHUR, MOLTEN is carried, the forced ventilation of the cargo tanks shall be brought into service at latest when the concentration of hydrogen sulphide reaches 1.0 %, by volume.

(b) When during the carriage of UN 2448 SULPHUR, MOLTEN, the concentration of hydrogen sulphide exceeds 1.85 %, the boat master shall immediately notify the nearest competent authority.

When a significant increase in the concentration of hydrogen sulphide in a hold space leads it to be supposed that the sulphur has leaked, the cargo tanks shall be unloaded as rapidly as possible. A new load may only be taken on board once the authority which issued the certificate of approval has carried out a further inspection.

- (c) When UN 2448 SULPHUR, MOLTEN is carried, the concentration of hydrogen sulphide shall be measured in the vapour phase of the cargo tanks and concentrations of sulphur dioxide and hydrogen sulphide in the hold spaces.
 - (d) The measurements prescribed in (c) shall be made every eight hours. The results of the measurements shall be recorded in writing.
29. When particulars concerning the vapour pressure or the boiling point are given in column (2), the relevant information shall be added to the proper shipping name in the transport document, e.g.

UN 1224 KETONES, LIQUID, N.O.S.,
110 kPa < vp 50 ≤ 174 kPa or

UN 2929 TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.,
boiling point ≤ 60°C

30. When these substances are carried, the hold spaces of open type N tank vessels may contain auxiliary equipment.
31. When these substances are carried, the vessel shall be equipped with a rapid blocking valve placed directly on the shore connection.
32. In the case of transport of this substance, the following additional requirements are applicable:

- (a) The outside of the cargo tanks shall be equipped with insulation of low flammability. This insulation shall be strong enough to resist shocks and vibration. Above deck, the insulation shall be protected by a covering.

The outside temperature of this covering shall not exceed 70 °C.

- (b) The spaces containing the cargo tanks shall be provided with ventilation. Connections for forced ventilation shall be fitted.
- (c) The cargo tanks shall be equipped with forced ventilation installations which, in all transport conditions, will reliably keep the concentration of hydrogen sulphide above the liquid phase below 1.85 % by volume.

The ventilation installations shall be fitted in such a way as to prevent the deposit of the goods to be transported.

The exhaust line of the ventilation shall be fitted in such a way as not to present a risk to personnel.

- (d) The cargo tank and the hold spaces shall be fitted with outlets and piping to allow gas sampling.
- (e) The outlets of the cargo tanks shall be situated at a height such that for a trim of 2° and a list of 10°, no sulphur can escape. All the outlets shall be situated above the deck in the open air. Each outlet shall be equipped with a permanently fixed closing mechanism.

One of these mechanisms shall be capable of being opened for slight overpressure within the tank.

- (f) The pipes for loading and unloading shall be equipped with adequate insulation. They shall be capable of being heated.
- (g) The heat transfer fluid shall be such that in the event of a leak into a tank, there is no risk of a dangerous reaction with the sulphur.

33. The following provisions are applicable to transport of this substance:

Construction requirements:

- (a) Hydrogen peroxide solutions may be transported only in cargo tanks equipped with deep-well pumps.
- (b) Cargo tanks and their equipment shall be constructed of solid stainless steel of a type appropriate to hydrogen peroxide solutions (for example, 304, 304L, 316, 316L or 316 Ti). None of the non-metallic materials used for the system of cargo tanks shall be attacked by hydrogen peroxide solutions or cause the decomposition of the substance.

- (c) The temperature sensors shall be installed in the cargo tanks directly under the deck and at the bottom. Remote temperature read-outs and monitoring shall be provided for in the wheelhouse.
- (d) Fixed oxygen monitors (or gas-sampling lines) shall be provided in the areas adjacent to the cargo tanks so that leaks in such areas can be detected. Account shall be taken of the increased flammability arising from the increased presence of oxygen. Remote read-outs, continuous monitoring (if the sampling lines are used, intermittent monitoring will suffice) and visible and audible alarms similar to those for the temperature sensors shall also be located in the wheelhouse. The visible and audible alarms shall be activated if the oxygen concentration in these void spaces exceeds 30 % by volume. Two additional oxygen monitors shall also be available.
- (e) The cargo tank venting systems which are equipped with filters shall be fitted with pressure/vacuum relief valves appropriate to closed-circuit ventilation and with an extraction installation should cargo tank pressure rise rapidly as a result of an uncontrolled decomposition (see under m). These air supply and extraction systems shall be so designed that water cannot enter the cargo tanks. In designing the emergency extraction installation account shall be taken of the design pressure and the size of the cargo tanks.
- (f) A fixed water-spray system shall be provided for diluting and washing away any hydrogen peroxide solutions spilled onto the deck. The area covered by the jet of water shall include the shore connections and the deck containing the cargo tanks designated for carrying hydrogen peroxide solutions.

The following minimum requirements shall be complied with:

- .1 The substance shall be diluted from the original concentration to a 35 % concentration within five minutes from the spillage on the deck;
 - .2 The rate and estimated size of the spill shall be determined in the light of the maximum permissible loading or unloading rates, the time required to halt the spillage in the event of tank overfill or a piping/hose failure, and the time necessary to begin application of dilution water with actuation of the alarm at the cargo control location or in the wheelhouse.
- (g) The outlets of the pressure valves shall be situated at least 2 metres above the walkways if they are less than 4 metres from the walkway.

- (h) A temperature sensor shall be installed by each pump to make it possible to monitor the temperature of the cargo during unloading and detect any overheating due to defective operation of the pump.

Servicing requirements:

Carrier

- (i) Hydrogen peroxide solutions may only be carried in cargo tanks which have been thoroughly cleaned and passivated, in accordance with the procedure described under (j), of all traces of previous cargoes, their vapours or their ballast waters. A certificate stating that the procedure described under (j) has been duly complied with must be carried on board.

Particular care in this respect is essential to ensure the safe carriage of hydrogen peroxide solutions:

- .1 When a hydrogen peroxide solution is being carried, no other cargo may be carried simultaneously;
 - .2 Tanks which have contained hydrogen peroxide solutions may be reused for other cargoes after they have been cleaned by persons or companies approved for this purpose by the competent authority;
 - .3 In the design of the cargo tanks, efforts must be made to keep to a minimum any internal tank structure, to ensure free draining, no entrapment and ease of visual inspection.
- (j) Procedures for inspection, cleaning, passivation and loading for the transport of hydrogen peroxide solutions with a concentration of 8 to 60 per cent in cargo tanks which have previously carried other cargoes.

Before their reuse for the transport of hydrogen peroxide solutions, cargo tanks which have previously carried cargoes other than hydrogen peroxide must be inspected, cleaned and passivated. The procedures described in paragraphs .1 to .7 below for inspection and cleaning apply to stainless steel cargo tanks. The procedure for passivating stainless steel is described in paragraph .8. Failing any other instructions, all the measures apply to cargo tanks and to all their structures which have been in contact with other cargoes.

- .1 After unloading of the previous cargo, the cargo tank must be degassed and inspected for any remaining traces, carbon residues and rust.
- .2 The cargo tanks and their equipment must be washed with clear filtered water. The water used must be at least of the same quality as drinking water and have a low chlorine content.

- .3 Traces of the residues and vapours of the previous cargo must be removed by the steam cleaning of the cargo tanks and their equipment.
- .4 The cargo tanks and their equipment must then be rewashed with clear water of the quality specified in paragraph 2 above and dried in filtered, oil-free air.
- .5 Samples must be taken of the atmosphere in the cargo tanks and these must be analysed for their content of organic gases and oxygen.
- .6 The cargo tank must be reinspected for any traces of the previous cargo, carbon residues or rust or odours of the previous cargo.
- .7 If the inspection and the other measures point to the presence of traces of the previous cargo or of its gases, the measures described in paragraphs .2 to .4 above must be repeated.
- .8 Stainless steel cargo tanks and their structures which have contained cargoes other than hydrogen peroxide solutions and which have been repaired must, regardless whether or not they have previously been passivated, be cleaned and passivated in accordance with the following procedure:
 - .8.1 The new weld seams and other repaired parts must be cleaned and scrubbed with stainless steel brushes, graving tools, sandpaper and polishers. Rough surfaces must be made smooth and a final polishing must be carried out;
 - .8.2 Fatty and oily residues must be removed with the use of organic solvents or appropriate cleaning products diluted with water. The use of chlorinated products shall be avoided because these might seriously interfere with the passivation procedure;
 - .8.3 Any residues that have been removed must be eliminated and the tanks must then be washed.

- (k) During the transfer of the hydrogen peroxide solutions, the related piping system must be separated from all other systems. Loading and unloading piping used for the transfer of hydrogen peroxide solutions must be marked as follows:

“For Hydrogen Peroxide
Solution Transfer only”

- (l) If the temperature in the cargo tanks rises above 35 °C, visible and audible alarms shall activate in the wheelhouse.

Master

- (m) If the temperature rise exceeds 4 °C for 2 hours or if the temperature in the cargo tanks exceeds 40 °C, the master must contact the consignor directly, with a view to taking any action that might be necessary.

Filler

- (n) Hydrogen peroxide solutions must be stabilized to prevent decomposition. The manufacturer must provide a stabilization certificate which must be carried on board and must specify:

- .1 The disintegration date of the stabilizer and the duration of its effectiveness;
- .2 Actions to be taken should the product become unstable during the voyage.

- (o) Only those hydrogen peroxide solutions which have a maximum decomposition rate of 1.0 per cent per year at 25 °C may be carried. A certificate from the filler stating that the product meets this standard must be presented to the master and kept on board. An authorized representative of the manufacturer must be on board to monitor the loading operations and to test the stability of the hydrogen peroxide solutions to be transported. He shall certify to the master that the cargo has been loaded in a stable condition.

- 34. For type N carriage, the flanges and stuffing boxes of the loading and unloading hoses must be fitted with a protection device to protect against splashing.
- 35. A direct system for the cargo refrigerating system is not permitted for this substance.
- 36. Only an indirect system for the cargo refrigerating system is permitted for this substance.
- 37. For this substance, the cargo tank system shall be capable of resisting the vapour pressure of the cargo at higher ambient temperatures whatever the system that has been adopted for treating the boil-off gas.
- 38. When the initial melting point of these mixtures in accordance with standard ASTM D86-01 is above 60° C, the transport requirements for packing group II are applicable.
- 39. (a) The joints, outlets, closing devices and other technical equipment shall be of such a sort that there cannot be any leakage of carbon dioxide during normal transport operations (cold, fracturing of materials, freezing of fixtures, run-off outlets etc.).

(b) The loading temperature (at the loading station) shall be mentioned in the transport document.

(c) An oxygen meter shall be kept on board, together with instructions on its use which can be read by everyone on board. The oxygen meter shall be used as a testing device when entering holds, pump rooms, areas situated at depth and when work is being carried out on board.

(d) At the entry of accommodation and in other places where the crew may spend time there shall be a measuring device which lets off an alarm when the oxygen level is too low or when the CO₂ level is too high.

(e) The loading temperature (established after loading) and the maximum duration of the journey shall be mentioned in the transport document.

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1005	AMMONIA, ANHYDROUS	2	2TC		2.3+8+2.1	G	1	1	3		91		1	no	T1	II A	yes	PP, EP, EX, TOX, A	2	1; 31
1010	1,2-BUTADIENE, STABILIZED	2	2F		2.1+unst.	G	1	1			91		1	no	T2	II B ⁴⁾	yes	PP, EX, A	1	2; 3; 31
1010	1,3-BUTADIENE, STABILIZED	2	2F		2.1+unst.+CMR	G	1	1			91		1	no	T2	II B	yes	PP, EX, A	1	2; 3; 31
1010	BUTADIENES STABILIZED or BUTADIENES AND HYDROCARBON MIXTURE, STABILIZED, having a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l	2	2F		2.1+unst.	G	1	1			91		1	no	T2	II B	yes	PP, EX, A	1	2; 3; 31
1011	BUTANE	2	2F		2.1+CMR	G	1	1			91		1	no	T2	II A	yes	PP, EX, A	1	31; 99
1012	1-BUTYLENE	2	2F		2.1	G	1	1			91		1	no	T2	II A	yes	PP, EX, A	1	31
1020	CHLOROPENTAFLUOROETHANE (REFRIGERANT GAS R 115)	2	2A		2.2	G	1	1			91		1	no			no	PP	0	31
1030	1,1-DIFLUOROETHANE (REFRIGERANT GAS R 152a)	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31
1033	DIMETHYL ETHER	2	2F		2.1	G	1	1			91		1	no	T3	II B	yes	PP, EX, A	1	31
1038	ETHYLENE, REFRIGERATED LIQUID	2	3F		2.1	G	1	1	1		95		1	no	T1	II B	yes	PP, EX, A	1	31
1040	ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 °C	2	2TF		2.3+2.1	G	1	1			91		1	yes	T2	II B	yes	PP, EP, EX, TOX, A	2	2; 3; 11; 31
1055	ISOBUTYLENE	2	2F		2.1	G	1	1			91		1	no	T2 ¹⁾	II A	yes	PP, EX, A	1	31
1063	METHYL CHLORIDE (REFRIGERANT GAS R 40)	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31
1077	PROPYLENE	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1083	TRIMETHYLAMINE, ANHYDROUS	2	2F		2.1	G	1	1			91		1	no	T4	II A	yes	PP, EX, A	1	31
1086	VINYL CHLORIDE, STABILIZED	2	2F		2.1+unst.	G	1	1			91		1	no	T2	II A	yes	PP, EX, A	1	2; 3; 13; 31
1088	ACETAL	3	F1	II	3	N	2	2		10	97	0.83	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
1089	ACETALDEHYDE (ethanal)	3	F1	I	3+N3	C	1	1			95	0.78	1	yes	T4	II A	yes	PP, EX, A	1	
1090	ACETONE	3	F1	II	3	N	2	2		10	97	0.79	3	yes	T1	II A	yes	PP, EX, A	1	
1092	ACROLEINE, STABILIZED	6.1	TF1	I	6.1+3+unst.+N1	C	2	2	3	50	95	0.84	1	no	T3 ²⁾	II B	yes	PP, EP, EX, TOX, A	2	2; 3; 5; 23
1093	ACRYLONITRILE, STABILIZED	3	FT1	I	3+6.1+unst.+N2+CMR	C	2	2	3	50	95	0.8	1	no	T1	II B	yes	PP, EP, EX, TOX, A	2	3; 5; 23
1098	ALLYL ALCOHOL	6.1	TF1	I	6.1+3+N1	C	2	2		40	95	0.85	1	no	T2	II B	yes	PP, EP, EX, TOX, A	2	
1100	ALLYL CHLORIDE	3	FT1	I	3+6.1+N1	C	2	2	3	50	95	0.94	1	no	T2	II A	yes	PP, EP, EX, TOX, A	2	23
1105	PENTANOLS (n- PENTANOL)	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II A	yes	PP, EX, A	0	
1106	AMYLAMINE (n-AMYLAMINE)	3	FC	II	3+8	C	2	2		40	95	0.76	2	yes	T4 ³⁾	II A ⁷⁾	yes	PP, EP, EX, A	1	
1107	AMYL CHLORIDES (1-CHLOROPENTANE)	3	F1	II	3	C	2	2		40	95	0.88	2	yes	T3	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES (1-CHLORO-3-METHYLBUTANE)	3	F1	II	3	C	2	2		45	95	0.89	2	yes	T3	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES (2-CHLORO-2-METHYLBUTANE)	3	F1	II	3	C	2	2		50	95	0.87	2	yes	T2	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES (1-CHLORO-2,2-DIMETHYL-PROPANE)	3	F1	II	3	C	2	2		50	95	0.87	2	yes	T3 ²⁾	II A	yes	PP, EX, A	1	
1107	AMYL CHLORIDES	3	F1	II	3	C	1	1			95	0.9	1	yes	T3 ²⁾	II A	yes	PP, EX, A	1	27

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1108	1-PENTENE (n-AMYLENE)	3	F1	I	3+N3	N	1	1			97	0.64	1	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
1114	BENZENE	3	F1	II	3+N3+CMR	C	2	2	3	50	95	0.88	2	yes	T1	II A	yes	PP, EP, EX, TOX, A	1	6: +10 °C; 17; 23
1120	BUTANOLS (tert- BUTYLALCOHOL)	3	F1	II	3	N	2	2	2	10	97	0.79	3	yes	T1	II A ⁷⁾	yes	PP, EX, A	1	7; 17
1120	BUTANOLS (sec-BUTYLALCOHOL)	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II B ⁷⁾	yes	PP, EX, A	0	
1120	BUTANOLS (n- BUTYL ALCOHOL)	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II B	yes	PP, EX, A	0	
1123	BUTYL ACETATES (sec-BUTYLACETATE)	3	F1	II	3	N	2	2		10	97	0.86	3	yes	T2	II A ⁷⁾	yes	PP, EX, A	1	
1123	BUTYL ACETATES (n-BUTYL ACETATE)	3	F1	III	3+N3	N	3	2			97	0.86	3	yes	T2	II A	yes	PP, EX, A	0	
1125	n-BUTYLAMINE	3	FC	II	3+8+N3	C	2	2	3	50	95	0.75	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1127	CHLOROBUTANES (1-CHLOROBUTANE)	3	F1	II	3	C	2	2	3	50	95	0.89	2	yes	T3	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES (2-CHLOROBUTANE)	3	F1	II	3	C	2	2	3	50	95	0.87	2	yes	T4 ³⁾	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES (1-CHLORO-2-METHYLPROPANE)	3	F1	II	3	C	2	2	3	50	95	0.88	2	yes	T4 ³⁾	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES (2-CHLORO-2-METHYL-PROPANE)	3	F1	II	3	C	2	2	3	50	95	0.84	2	yes	T1	II A	yes	PP, EX, A	1	23
1127	CHLOROBUTANES	3	F1	II	3	C	1	1			95	0.89	1	yes	T4 ³⁾	II A	yes	PP, EX, A	1	27
1129	BUTYRALDEHYDE (n-BUTYRALDEHYDE)	3	F1	II	3+N3	C	2	2	3	50	95	0.8	2	yes	T4	II A	yes	PP, EX, A	1	15; 23
1131	CARBON DISULPHIDE	3	FT1	I	3+6.1+N2	C	2	2	3	50	95	1.26	1	no	T6	II C	yes	PP, EP, EX, TOX, A	2	2; 9; 23

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1134	CHLOROBENZENE (phenyl chloride)	3	F1	III	3+N2+S	C	2	2		30	95	1.11	2	yes	T1	II A ⁸⁾	yes	PP, EX, A	0	
1135	ETHYLENE CHLOROHYDRIN (2-CHLOROETHANOL)	6.1	TF1	I	6.1+3	C	2	2		30	95	1.21	1	no	T2	II A ⁸⁾	yes	PP, EP, EX, TOX, A	2	
1143	CROTONALDEHYDE, STABILIZED	6.1	TF1	I	6.1+3+unst.+ N1	C	2	2		40	95	0.85	1	no	T3	II B	yes	PP, EP, EX, TOX, A	2	3; 5; 15
1145	CYCLOHEXANE	3	F1	II	3+N1	C	2	2	3	50	95	0.78	2	yes	T3	II A	yes	PP, EX, A	1	6: +11 °C; 17
1146	CYCLOPENTANE	3	F1	II	3+N2	N	2	3		10	97	0.75	3	yes	T2	II A	yes	PP, EX, A	1	
1150	1,2-DICHLOROETHYLENE (cis-1,2-DICHLOROETHYLENE)	3	F1	II	3+N2	C	2	2	3	50	95	1.28	2	yes	T2 ¹⁾	II A	yes	PP, EX, A	1	23
1150	1,2-DICHLOROETHYLENE (trans-1,2-DICHLOROETHYLENE)	3	F1	II	3+N2	C	2	2	3	50	95	1.26	2	yes	T2	II A	yes	PP, EX, A	1	23
1153	ETHYLENE GLYCOL DIETHYL ETHER	3	F1	III	3	N	3	2			97	0.84	3	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	
1154	DIETHYLAMINE	3	FC	II	3+8+N3	C	2	2	3	50	95	0.7	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1155	DIETHYL ETHER	3	F1	I	3	C	1	1			95	0.71	1	yes	T4	II B	yes	PP, EX, A	1	
1157	DIISOBUTYL KETONE	3	F1	III	3+N3+F	N	3	3			97	0.81	3	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	
1159	DIISOPROPYL ETHER	3	F1	II	3+N2	C	2	2	3	50	95	0.72	2	yes	T2	II A	yes	PP, EX, A	1	
1160	DIMETHYLAMINE AQUEOUS SOLUTION	3	FC	II	3+8	C	2	2	3	50	95	0.82	2	yes	T2	II B ⁴⁾	yes	PP, EP, EX, A	1	23
1163	DIMETHYLHYDRAZINE, UNSYMMETRICAL	6.1	TFC	I	6.1+3+8+N2+CMR	C	2	2	3	50	95	0.78	1	no	T3	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	23
1165	DIOXANE	3	F1	II	3	N	2	2		10	97	1.03	3	yes	T2	II B	yes	PP, EX, A	1	6: +14 °C; 17
1167	DIVINYL ETHER, STABILIZED	3	F1	I	3+unst.	C	1	1			95	0.77	1	yes	T2	II B ⁷⁾	yes	PP, EX, A	1	2; 3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1170	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), aqueous solution with more than 70 % alcohol by volume	3	F1	II	3	N	2	2		10	97	0,79 - 0,87	3	yes	T2	II B	yes	PP, EX, A	1	
1170	ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), aqueous solution with more than 24 % and not more than 70 % alcohol by volume	3	F1	III	3	N	3	2			97	0,87 - 0,96	3	yes	T2	II B	yes	PP, EX, A	0	
1171	ETHYLENE GLYCOL MONOETHYL ETHER	3	F1	III	3+CMR	N	2	3	3	10	97	0,93	3	yes	T3	II B	yes	PP, EX, A	0	
1172	ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	3	F1	III	3+N3+CMR	N	2	3	3	10	97	0,98	3	yes	T2	II A	yes	PP, EX, A	0	
1173	ETHYL ACETATE	3	F1	II	3	N	2	2		10	97	0,9	3	yes	T1	II A	yes	PP, EX, A	1	
1175	ETHYLBENZENE	3	F1	II	3+N3	N	2	2		10	97	0,87	3	yes	T2	II B	yes	PP, EX, A	1	
1177	2-ETHYLBUTYL ACETATE	3	F1	III	3	N	3	2			97	0,88	3	yes	T3	II A	yes	PP, EX, A	0	
1179	ETHYL BUTYL ETHER (ETHYL tert-BUTYL ETHER)	3	F1	II	3+N3	N	2	2		10	97	0,74	3	yes	T2	II B	yes	PP, EX, A	1	
1184	ETHYLENE DICHLORIDE (1,2-dichloroethane)	3	FT1	II	3+6.1+CMR	C	2	2		50	95	1,25	2	no	T2	II A	yes	PP, EP, EX, TOX, A	2	
1188	ETHYLENE GLYCOL MONOMETHYL ETHER	3	F1	III	3+CMR	N	2	3	3	10	97	0,97	3	yes	T3	II B	yes	PP, EX, A	0	
1191	OCTYL ALDEHYDES (2-ETHYLCAPRONALDEHYDE)	3	F1	III	3+F	C	2	2		30	95	0,82	2	yes	T4	II A	yes	PP, EX, A	0	
1191	OCTYL ALDEHYDES (n-OCTALDEHYDE)	3	F1	III	3+N3+F	N	3	3			97	0,82	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	0	
1193	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	3	F1	II	3	N	2	2		10	97	0,8	3	yes	T1	II A	yes	PP, EX, A	1	
1198	FORMALDEHYDE SOLUTION, FLAMMABLE	3	FC	III	3+8+N3	N	3	2			97	1,09	3	yes	T2	II B	yes	PP, EP, EX, A	0	34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1199	FURALDEHYDES (a-FURALDEHYDE) or FURFURALDEHYDES (a-FURFURYLALDEHYDE)	6.1	TF1	II	6.1+3	C	2	2		25	95	1.16	2	no	T3 ²⁾	II B	yes	PP, EP, EX, TOX, A	2	15
1202	GAS OIL or DIESEL FUEL or HEATING OIL (LIGHT) (flash-point not more than 60 °C)	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*	< 0,85	*	yes			no	PP	0	*see flowchart
1202	GAS OIL complying with standard EN 590: 2004 or DIESEL FUEL or HEATING OIL (LIGHT) with flash-point as specified in EN 590:2004	3	F1	III	3+N2+F	N	4	3			97	0,82 - 0,85	3	yes			no	PP	0	
1202	GAS OIL or DIESEL FUEL or HEATING OIL (LIGHT) (flash-point more than 60 °C but not more than 100 °C)	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*	< 1,1	*	yes			no	PP	0	*see flowchart
1203	MOTOR SPIRIT or GASOLINE or PETROL	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0,68 - 0,72 ¹⁰⁾	3	yes	T3	II A	yes	PP, EX, A	1	
1203	MOTOR SPIRIT or GASOLINE or PETROL, WITH MORE THAN 10 % BENZENE BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T3	II A	yes	PP, EX, A	1	29
1203	MOTOR SPIRIT or GASOLINE or PETROL WITH MORE THAN 10 % BENZENE 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T3	II A	yes	PP, EX, A	1	23; 29
1203	MOTOR SPIRIT or GASOLINE or PETROL WITH MORE THAN 10 % BENZENE 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T3	II A	yes	PP, EX, A	1	29
1203	MOTOR SPIRIT or GASOLINE or PETROL WITH MORE THAN 10 % BENZENE BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T3	II A	yes	PP, EX, A	1	29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1206	HEPTANES (n-HEPTANE)	3	F1	II	3+N1	C	2	2	3	50	95	0.68	2	yes	T3	II A	yes	PP, EX, A	1	
1208	HEXANES (n-HEXANE)	3	F1	II	3+N1	C	2	2	3	50	95	0.66	2	yes	T3	II A	yes	PP, EX, A	1	
1212	ISOBUTANOL or ISOBUTYL ALCOHOL	3	F1	III	3	N	3	2			97	0.8	3	yes	T2	II A	yes	PP, EX, A	0	
1213	ISOBUTYLACETATE	3	F1	II	3+N3	N	2	2		10	97	0.87	3	yes	T2	II A ⁷⁾	yes	PP, EX, A	1	
1214	ISOBUTYLAMINE	3	FC	II	3+8	C	2	2	3	50	95	0.73	2	yes	T2	II A	yes	PP, EP, EX, A	1	23
1216	ISOOCTENES	3	F1	II	3+N2	N	2	3		10	97	0.73	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
1218	ISOPRENE, STABILIZED	3	F1	I	3+unst.+N2+CMR	N	1	1			95	0.68	1	yes	T3	II B	yes	PP, EX, A	1	2; 3; 5;16
1219	ISOPROPRANOL or ISOPROPYL ALCOHOL	3	F1	II	3	N	2	2		10	97	0.78	3	yes	T2	II A	yes	PP, EX, A	1	
1220	ISOPROPYLE ACETATE	3	F1	II	3	N	2	2		10	97	0.88	3	yes	T2	II A	yes	PP, EX, A	1	
1221	ISOPROPYLAMINE	3	FC	I	3+8+N3	C	1	1			95	0.69	1	yes	T2	II A ⁷⁾	yes	PP, EP, EX, A	1	
1223	KEROSENE	3	F1	III	3+N2+F	N	3	3			97	≤ 0,83	3	yes	T3	II A	yes	PP, EX, A	0	14
1224	KETONES, LIQUID, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart
1224	KETONES, LIQUID, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14; 27 *see flowchart
1229	MESITYL OXYDE	3	F1	III	3	N	3	2			97	0.85	3	yes	T2	II B ⁴⁾	yes	PP, EX, A	0	
1230	METHANOL	3	FT1	II	3+6.1	N	2	2	3	50	95	0.79	2	yes	T2	II A	yes	PP, EP, EX, TOX, A	1	23
1231	METHYL ACETATE	3	F1	II	3	N	2	2		10	97	0.93	3	yes	T1	II A	yes	PP, EX, A	1	
1235	METHYLAMINE, AQUEOUS SOLUTION	3	FC	II	3+8	C	2	2		50	95		2	yes	T2	II A	yes	PP, EP, EX, A	1	
1243	METHYL FORMATE	3	F1	I	3	C	1	1			95	0.97	1	yes	T2	II A	yes	PP, EX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1244	METHYLHYDRAZINE	6.1	TFC	I	6.1+3+8	C	2	2		45	95	0.88	1	no	T4	II C ⁵⁾	yes	PP, EP, EX, TOX, A	2	
1245	METHYL ISOBUTYL KETONE	3	F1	II	3	N	2	2		10	97	0.8	3	yes	T1	II A	yes	PP, EX, A	1	
1247	METHYL METHACRYLATE MONOMER, STABILIZED	3	F1	II	3+unst.	C	2	2		40	95	0.94	1	yes	T2	II A	yes	PP, EX, A	1	3; 5; 16
1262	OCTANES (n-OCTANE)	3	F1	II	3+N1	C	2	2		45	95	0.7	2	yes	T3	II A	yes	PP, EX, A	1	
1264	PARALDEHYDE	3	F1	III	3	N	3	2			97	0.99	3	yes	T3	II A ⁷⁾	yes	PP, EX, A	0	6: +16 °C; 17
1265	PENTANES, liquid (2- METHYLBUTANE)	3	F1	I	3+N2	N	1	1			97	0.62	1	yes	T2	II A	yes	PP, EX, A	1	
1265	PENTANES, liquid (n-PENTANE)	3	F1	II	3+N2	N	2	3		50	97	0.63	3	yes	T3	II A	yes	PP, EX, A	1	
1265	PENTANES, liquid (n-PENTANE)	3	F1	II	3+N2	N	2	3	3	10	97	0.63	3	yes	T3	II A	yes	PP, EX, A	1	
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR+F	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 29; 38
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1267	PETROLEUM CRUDE OIL WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1267	PETROLEUM CRUDE OIL	3	F1	I	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 29; *see flowchart
1267	PETROLEUM CRUDE OIL	3	F1	II	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 29; *see flowchart
1267	PETROLEUM CRUDE OIL	3	F1	III	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14; *see flowchart
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	I	3+CMR+F	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29; 38

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60°C	3	F1	II	3+CMR+F	C	2	2	3	50	95	0.765	2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60°C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T 3	II A	yes	PP, EX, A	1	23; 27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S, WITH MORE THAN 10 % BENZENE, vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S. WITH MORE THAN 10 % BENZENE or PETROLEUM PRODUCTS, N.O.S, WITH MORE THAN 10 % BENZENE, vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1268	PETROLEUM DISTILLATES, N.O.S or PETROLEUM PRODUCTS, N.O.S. (NAPHTHA) 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0.735	3	yes	T3	II A	yes	PP, EX, A	1	14; 27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1268	PETROLEUM DISTILLATES; N.O.S or PETROLEUM PRODUCTS, N.O.S. (NAPHTHA) 110 kPa < vp50 ≤ 150 kPa	3	F1	II	3+N2+CMR+F	N	2	3	3	10	97	0.735	3	yes	T3	II A	yes	PP, EX, A	1	14; 29
1268	PETROLEUM DISTILLATES, N.O.S or PETROLEUM PRODUCTS, N.O.S. (NAPHTHA) vp50 ≤ 110 kPa	3	F1	II	3+N2+CMR+F	N	2	3		10	97	0.735	3	yes	T3	II A	yes	PP, EX, A	1	14; 29
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S. (BENZENE HEART CUT) vp50 ≤ 110 kPa	3	F1	II	3+N2+CMR+F	N	2	3		10	97	0.765	3	yes	T3	II A	yes	PP, EX, A	1	14; 29
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	F1	I	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14; 27 *see flowchart
1274	n-PROPANOL or PROPYL ALCOHOL, NORMAL	3	F1	II	3	N	2	2		10	97	0.8	3	yes	T2	II B	yes	PP, EX, A	1	
1274	n-PROPANOL or PROPYL ALCOHOL, NORMAL	3	F1	III	3	N	3	2			97	0.8	3	yes	T2	II B	yes	PP, EX, A	0	
1275	PROPIONALDEHYDE	3	F1	II	3+N3	C	2	2	3	50	95	0.81	2	yes	T4	II B	yes	PP, EX, A	1	15; 23
1276	n-PROPYL ACETATE	3	F1	II	3+N3	N	2	2		10	97	0.88	3	yes	T1	II A	yes	PP, EX, A	1	
1277	PROPYLAMINE (1-aminopropane)	3	FC	II	3+8	C	2	2	3	50	95	0.72	2	yes	T3 ²⁾	II A	yes	PP, EP, EX, A	1	23

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1278	1-CHLOROPROPANE (propyl chloride)	3	F1	II	3	C	2	2	3	50	95	0.89	2	yes	T1	II A	yes	PP, EX, A	1	23
1279	1,2-DICHLOROPROPANE or PROPYL DICHLORIDE	3	F1	II	3+N2	C	2	2		45	95	1.16	2	yes	T1	II A ⁸⁾	yes	PP, EX, A	1	
1280	PROPYLENE OXIDE	3	F1	I	3+unst.+N3+CMR	C	1	1			95	0.83	1	yes	T2	II B	yes	PP, EX, A	1	2; 12; 31
1282	PYRIDINE	3	F1	II	3+N3	N	2	2		10	97	0.98	3	yes	T1	II A ⁸⁾	yes	PP, EX, A	1	
1289	SODIUM METHYLATE SOLUTION in alcohol	3	FC	III	3+8	N	3	2			97	0.969	3	yes	T2	II A	yes	PP, EP, EX, A	0	34
1294	TOLUENE	3	F1	II	3+N3	N	2	2		10	97	0.87	3	yes	T1	II A ⁸⁾	yes	PP, EX, A	1	
1296	TRIETHYLAMINE	3	FC	II	3+8+N3	C	2	2		50	95	0.73	2	yes	T3	II A ⁸⁾	yes	PP, EP, EX, A	1	
1300	TURPENTINE SUBSTITUTE	3	F1	III	3+N2+F	N	3	3			97	0.78	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	0	
1301	VINYL ACETATE, STABILIZED	3	F1	II	3+unst.+N3	N	2	2		10	97	0.93	2	yes	T2	II A	yes	PP, EX, A	1	3; 5; 16
1307	XYLENES (o- XYLENE)	3	F1	III	3+N2	N	3	3			97	0.88	3	yes	T1	II A	yes	PP, EX, A	0	
1307	XYLENES (m- XYLENE)	3	F1	III	3+N2	N	3	3			97	0.86	3	yes	T1	II A	yes	PP, EX, A	0	
1307	XYLENES (p- XYLENE)	3	F1	III	3+N2	N	3	3	2		97	0.86	3	yes	T1	II A	yes	PP, EX, A	0	6: +17 °C; 17
1307	XYLENES (mixture with melting point ≤ 0° C)	3	F1	II	3+N2	N	3	3			97		3	yes	T1	II A	yes	PP, EX, A	1	
1307	XYLENES (mixture with melting point ≤ 0° C)	3	F1	III	3+N2	N	3	3			97		3	yes	T1	II A	yes	PP, EX, A	0	
1307	XYLENES (mixture with 0° C < melting point < 13° C)	3	F1	III	3+N2	N	3	3	2		97		3	yes	T1	II A	yes	PP, EX, A	0	6: +17 °C; 17
1541	ACETONE CYANOHYDRIN, STABILIZED	6.1	T1	I	6.1+unst.+N1	C	2	2		50	95	0.932	1	no			no	PP, EP, TOX, A	2	3
1545	ALLYL ISOTHIOCYANATE, STABILIZED	6.1	TF1	II	6.1+3+unst.	C	2	2		30	95	1.02	1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	2; 3

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1547	ANILINE	6.1	T1	II	6.1+N1	C	2	2		25	95	1.02	2	no			no	PP, EP, TOX, A	2	
1578	CHLORONITROBENZENES, SOLID, MOLTEN (p-CHLORONITROBENZENE)	6.1	T2	II	6.1+N2+S	C	2	1	2	25	95	1.37	2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	7; 17; 26
1578	CHLORONITROBENZENES, SOLID, MOLTEN (p-CHLORONITROBENZENE)	6.1	T2	II	6.1+N2+S	C	2	1	4	25	95	1.37	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +112 °C; 26
1591	o-DICHLOROBENZENE	6.1	T1	III	6.1+N1+S	C	2	2		25	95	1.32	2	no			no	PP, EP, TOX, A	0	
1593	DICHLOROMETHANE (methyl chloride)	6.1	T1	III	6.1	C	2	2	3	50	95	1.33	2	no			no	PP, EP, TOX, A	0	23
1594	DIETHYL SULPHATE	6.1	T1	II	6.1+N2+CMR	C	2	2		25	95	1.18	2	no			no	PP, EP, TOX, A	2	
1595	DIMETHYL SULPHATE	6.1	TC1	I	6.1+8+N3+CMR	C	2	2		25	95	1.33	2	no			no	PP, EP, TOX, A	2	
1604	ETHYLENEDIAMINE	8	CF1	II	8+3+N3	N	3	2			97	0.9	3	yes	T2	II A	yes	PP, EP, EX, A	1	6: +12 °C; 17; 34
1605	ETHYLENE DIBROMIDE	6.1	T1	I	6.1+N2+CMR	C	2	2		30	95	2.18	1	no			no	PP, EP, TOX, A	2	6: +14 °C; 17
1648	ACETONITRILE (methyl cyanide)	3	F1	II	3	N	2	2		10	97	0.78	3	yes	T1	II A	yes	PP, EX, A	1	
1662	NITROBENZENE	6.1	T1	II	6.1+N2	C	2	2	2	25	95	1.21	2	no	T1	II B	yes	PP, EP, EX, TOX, A	2	6: +10°C; 17
1663	NITROPHENOLS	6.1	T2	III	6.1+N3+S	C	2	2	2	25	95		2	no	T1	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	7; 17
1663	NITROPHENOLS	6.1	T2	III	6.1+N3+S	C	2	2	4	25	95		2	no			no	PP, EP, TOX, A	0	7; 17; 20: +65 °C
1664	NITROTOLUENES, LIQUID (o-NITROTOLUENE)	6.1	T1	II	6.1+N2+CMR+S	C	2	2		25	95	1.16	2	no			no	PP, EP, TOX, A	2	17

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1708	TOLUIDINES, LIQUID (o-TOLUIDINE)	6.1	T1	II	6.1+N1	C	2	2		25	95	1	2	no			no	PP, EP, TOX, A	2	
1708	TOLUIDINES, LIQUID (m-TOLUIDINE)	6.1	T1	II	6.1+N1 +CMR	C	2	2		25	95	1.03	2	no			no	PP, EP, TOX, A	2	
1710	TRICHLOROETHYLENE	6.1	T1	III	6.1+N2 +CMR	C	2	2		50	95	1.46	2	no			no	PP, EP, TOX, A	0	15
1715	ACETIC ANHYDRIDE	8	CF1	II	8+3	N	2	3		10	97	1.08	3	yes	T2	II A	yes	PP, EP, EX, A	1	34
1717	ACETYL CHLORIDE	3	FC	II	3+8	C	2	2	3	50	95	1.1	2	yes	T2	II A ⁸⁾	yes	PP, EP, EX, A	1	23
1718	BUTYL ACIDE PHOSPHATE	8	C3	III	8+N3	N	4	3			97	0.98	3	yes			no	PP, EP	0	34
1719	CAUSTIC ALKALI LIQUID, N.O.S.	8	C5	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 30; 34 *see flowchart
1719	CAUSTIC ALKALI LIQUID, N.O.S.	8	C5	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 30; 34 *see flowchart
1738	BENZYL CHLORIDE	6.1	TC1	II	6.1+8+3+N3+CMR+S	C	2	2		25	95	1.1	2	no	T1	II A ⁸⁾	yes	PP, EP, EX, TOX, A	2	
1742	BORON TRIFLUORIDE ACETIC ACID COMPLEX, LIQUID	8	C3	II	8	N	4	2			97	1.35	3	yes			no	PP, EP	0	34
1750	CHLORACETIC ACID SOLUTION	6.1	TC1	II	6.1+8+N1	C	2	2	2	25	95	1.58	2	no	T1	II A	yes	PP, EP, EX, TOX, A	2	7; 17
1750	CHLORACETIC ACID SOLUTION	6.1	TC1	II	6.1+8+N1	C	2	1	4	25	95	1.58	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +111 °C; 26
1760	CORROSIVE LIQUID, N.O.S.	8	C9	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
1760	CORROSIVE LIQUID, N.O.S.	8	C9	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1760	CORROSIVE LIQUID, N.O.S.	8	C9	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
1760	CORROSIVE LIQUID, N.O.S. (SODIUM MERCAPTOBENZOTHAZOLE, 50 % AQUEOUS SOLUTION)	8	C9	II	8+N1+F	C	2	2		40	95	1.25	2	yes			no	PP, EP	0	
1760	CORROSIVE LIQUID, N.O.S. (FATTY ALCOHOL, C ₁₂ -C ₁₄)	8	C9	III	8+F	N	4	3			97	0.89	3	yes			no	PP, EP	0	34
1760	CORROSIVE LIQUID, N.O.S. (ETHYLENEDIAMINE-TETRAACETIC ACID, TETRASODIUM SALT, 40 % AQUEOUS SOLUTION)	8	C9	III	8+N2	N	4	3			97	1.28	3	yes			no	PP, EP	0	34
1764	DICHLOROACETIC ACID	8	C3	II	8+N1	C	2	2		35	95	1.56	2	yes	T1	II A	yes	PP, EP, EX, A	0	17
1778	FLUROSILICIC ACID	8	C1	II	8+N3	N	2	3		10	97		3	yes			no	PP, EP	0	34
1779	FORMIC ACID with more than 85% acid by mass	8	CF1	II	8+3+N3	N	2	3		10	97	1.22	3	yes	T1	II A	yes	PP, EP, EX, A	1	6: +12 °C; 17; 34
1780	FUMARYL CHLORIDE	8	C3	II	8+N3	N	2	3		10	97	1.41	3	yes			no	PP, EP	0	8; 34
1783	HEXAMETHYLENEDIAMINE SOLUTION	8	C7	II	8+N3	N	3	2	2		97		3	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, A	0	7; 17; 34
1783	HEXAMETHYLENEDIAMINE SOLUTION	8	C7	III	8+N3	N	3	2	2		97		3	yes	T3	II B ⁴⁾	yes	PP, EP, EX, A	0	7; 17; 34
1789	HYDROCHLORIC ACID	8	C1	II	8	N	2	3		10	97		3	yes			no	PP, EP	0	34
1789	HYDROCHLORIC ACID	8	C1	III	8	N	4	3			97		3	yes			no	PP, EP	0	34
1805	PHOSPHORIC ACID, SOLUTION, WITH MORE THAN 80% (VOLUME) ACID	8	C1	III	8	N	4	3	2		95	> 1,6	3	yes			no	PP, EP	0	7; 17; 22; 34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1805	PHOSPHORIC ACID, SOLUTION, WITH 80% (VOLUME) ACID, OR LESS	8	C1	III	8	N	4	3			97	1,00 - 1,6	3	yes			no	PP, EP	0	22; 34
1814	POTASSIUM HYDROXIDE SOLUTION	8	C5	II	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1814	POTASSIUM HYDROXIDE SOLUTION	8	C5	III	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1823	SODIUM HYDROXIDE, SOLID, MOLTEN	8	C6	II	8+N3	N	4	1	4		95	2.13	3	yes			no	PP, EP	0	7; 17; 34
1824	SODIUM HYDROXIDE SOLUTION	8	C5	II	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1824	SODIUM HYDROXIDE SOLUTION	8	C5	III	8+N3	N	4	2			97		3	yes			no	PP, EP	0	30; 34
1830	SULPHURIC ACID with more than 51% acid	8	C1	II	8+N3	N	4	3			97	1,4 - 1,84	3	yes			no	PP, EP	0	8; 22; 30; 34
1831	SULPHURIC ACID, FUMING	8	CT1	I	8+6.1	C	2	2		50	95	1.94	1	no			no	PP, EP, TOX, A	2	8
1832	SULPHURIC ACID, SPENT	8	C1	II	8	N	4	3			97		3	yes			no	PP, EP	0	8; 30; 34
1846	CARBON TETRACHLORIDE	6.1	T1	II	6.1+N2+S	C	2	2	3	50	95	1.59	2	no			no	PP, EP, TOX, A	2	23
1848	PROPIONIC ACID with not less than 10% and less than 90% acid by mass	8	C3	III	8+N3	N	3	3			97	0.99	3	yes	T1	II A ⁷⁾	yes	PP, EP, EX, A	0	34
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR+F	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR+F	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR+F	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT > 115 °C	3	F1	II	3+CMR+F	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	29
1863	FUEL, AVIATION, TURBINE ENGINE	3	F1	I	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 29 *see flowchart
1863	FUEL, AVIATION, TURBINE ENGINE	3	F1	II	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 29 *see flowchart
1863	FUEL, AVIATION, TURBINE ENGINE	3	F1	III	3+(N1, N2, N3, CMR, F)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14 *see flowchart
1888	CHLOROFORM	6.1	T1	III	6.1+N2+CMR	C	2	2	3	50	95	1.48	2	no			no	PP, EP, TOX, A	0	23
1897	TETRACHLOROETHYLENE	6.1	T1	III	6.1+N2+S	C	2	2		50	95	1.62	2	no			no	PP, EP, TOX, A	0	
1912	METHYL CHLORIDE AND METHYLENE CHLORIDE MIXTURE	2	2F		2.1	G	1	1			91		1	no	T1	II A ⁸⁾	yes	PP, EX, A	1	31

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1915	CYCLOHEXANONE	3	F1	III	3	N	3	2			97	0.95	3	yes	T2	II A	yes	PP, EX, A	0	
1917	ETHYL ACRYLATE, STABILIZED	3	F1	II	3+unst.+N3	C	2	2		40	95	0.92	1	yes	T2	II B	yes	PP, EX, A	1	3; 5
1918	ISOPROPYLBENZENE (cumene)	3	F1	III	3+N2	N	3	3			97	0.86	3	yes	T2	II A ⁸⁾	yes	PP, EX, A	0	
1919	METHYL ACRYLATE, STABILIZED	3	F1	II	3+unst.+N3	C	2	2	3	50	95	0.95	1	yes	T2	II B	yes	PP, EX, A	1	3; 5; 23
1920	NONANES	3	F1	III	3+N2+F	N	3	3			97	0,70 - 0,75	3	yes	T3	II A	yes	PP, EX, A	0	
1922	PYRROLIDINE	3	FC	II	3+8	C	2	2		50	95	0.86	2	yes	T2	II A	yes	PP, EP, EX, A	1	
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A0)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A01)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A02)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE A1)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B1)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE B2)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S., (MIXTURE C)	2	2F		2.1	G	1	1			91		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	31
1969	ISOBUTANE	2	2F		2.1	G	1	1			91		1	no	T2 ¹⁾	II A	yes	PP, EX, A	1	31; 99
1978	PROPANE	2	2F		2.1	G	1	1			91		1	no	T1	II A	yes	PP, EX, A	1	31
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	3	FT1	I	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29; *see flowchart
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	3	FT1	II	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29; *see flowchart
1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S.	3	FT1	III	3+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	27; 29; *see flowchart
1987	ALCOHOLS, N.O.S. (tert-BUTANOL 90 % (MASS)/METHANOL 10 % (MASS) MIXTURE)	3	F1	II	3	N	2	2			10	97	3	yes	T1	II A	yes	PP, EX, A	1	
1987	ALCOHOLS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart
1987	ALCOHOLS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14; 27 *see flowchart
1987	ALCOHOLS, N.O.S. (CYCLOHEXANOL)	3	F1	III	3+N3+F	N	3	3	2		95	0.95	3	yes	T3	II A	yes	PP, EX, A	0	7; 17
1987	ALCOHOLS, N.O.S. (CYCLOHEXANOL)	3	F1	III	3+N3+F	N	3	3	4		95	0.95	3	yes			no	PP	0	7; 17; 20: +46 °C
1989	ALDEHYDES, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1989	ALDEHYDES, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14; 27 *see flowchart
1991	CHLOROPRENE, STABILIZED	3	FT1	I	3+6.1+unst.+CMR	C	2	2	3	50	95	0.96	1	no	T2	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	3; 5; 23
1992	FLAMMABLE LIQUID, TOXIC, N.O.S	3	FT1	I	3+6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29 *see flowchart
1992	FLAMMABLE LIQUID, TOXIC, N.O.S	3	FT1	II	3+6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29 *see flowchart
1992	FLAMMABLE LIQUID, TOXIC, N.O.S	3	FT1	III	3+6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	27; 29 *see flowchart
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 >175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa BOILING POINT > 115 °C	3	F1	II	3+CMR	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
1993	FLAMMABLE LIQUID, N.O.S.	3	F1	I	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart
1993	FLAMMABLE LIQUID, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14; 27; 29 *see flowchart
1993	FLAMMABLE LIQUID, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14; 27 *see flowchart
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 60 °C < BOILING POINT ≤ 85 °C	3	F1	III	3+CMR	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	23; 27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 85 °C < BOILING POINT ≤ 115 °C	3	F1	III	3+CMR	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	27; 29
1993	FLAMMABLE LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE BOILING POINT > 115 °C	3	F1	III	3+CMR	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	27; 29
1993	FLAMMABLE LIQUID, N.O.S. (CYCLOHEXANONE/ CYCLOHEXANOL MIXTURE)	3	F1	III	3+F	N	3	3			97	0.95	3	yes	T3	II A	yes	PP, EX, A	0	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1999	TARS, LIQUID, including road oils, and cutback bitumens	3	F1	III	3+S	N	4	3	2		97		3	yes	T3	II A ⁷⁾	yes	PP, EX, A	0	
2014	HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20 % but not more than 60 % hydrogen peroxide (stabilized as necessary)	5.1	OC1	II	5.1+8+unst.	C	2	2		35	95	1.2	2	yes			no	PP, EP	0	3; 33
2021	CHLOROPHENOLS, LIQUID (2-CHLOROPHENOL)	6.1	T1	III	6.1+N2	C	2	2		25	95	1.23	2	no	T1	II A ⁷⁾	yes	PP, EP, EX, TOX, A	0	6: +10 °C; 17
2022	CRESYLIC ACID	6.1	TC1	II	6.1+8+3+S	C	2	2		25	95	1.03	2	no	T1	II A	yes	PP, EP, EX, TOX, A	2	6: +16 °C; 17
2023	EPICHLORHYDRINE	6.1	TF1	II	6.1+3+N3	C	2	2		35	95	1.18	2	no	T2	II B	yes	PP, EP, EX, TOX, A	2	5
2031	NITRIC ACID, other than red fuming, with more than 70 % acid	8	CO1	I	8+5.1+N3	N	2	3		10	97	1,41-1,48	3	yes			no	PP, EP	0	34
2031	NITRIC ACID, other than red fuming with at least 65 % but not more than 70 % acid	8	CO1	II	8+5.1+N3	N	2	3		10	97	1,39-1,41	3	yes			no	PP, EP	0	34
2031	NITRIC ACID, other than red fuming, with less than 65 % acid	8	CO1	II	8+N3	N	2	3		10	97	1,02-1,39	3	yes			no	PP, EP	0	34
2032	NITRIC ACID, RED FUMING	8	COT	I	8+5.1+6.1+N3	C	2	2		50	95	1,48-1,51	1	no			no	PP, EP, TOX, A	2	
2045	ISOBUTYRALDEHYDE (ISOBUTYL ALDEHYDE)	3	F1	II	3+N3	C	2	2	3	50	95	0.79	2	yes	T4	II A ⁷⁾	yes	PP, EX, A	1	15; 23
2046	CYMENES	3	F1	III	3+N2+F	N	3	3			97	0.88	3	yes	T2	II A	yes	PP, EX, A	0	
2047	DICHLOROPROPENES (2,3-DICHLOROPROP-1-ENE)	3	F1	II	3+N2+CMR	C	2	2		45	95	1.2	2	yes	T1	II A	yes	PP, EX, A	1	
2047	DICHLOROPROPENES (MIXTURES of 2,3-DICHLOROPROP-1-ENE and 1,3-DICHLOROPROPENE)	3	F1	II	3+N2+CMR	C	2	2		45	95	1.23	2	yes	T2 ¹⁾	II A	yes	PP, EX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2047	DICHLOROPROPENES (MIXTURES of 2,3-DICHLOROPROP-1-ENE and 1,3-DICHLOROPROPENE)	3	F1	III	3+N2+CMR	C	2	2		45	95	1.23	2	yes	T2 ¹⁾	II A	yes	PP, EX, A	0	
2047	DICHLOROPROPENES (1,3-DICHLOROPROPENE)	3	F1	III	3+N2+CMR	C	2	2		40	95	1.23	2	yes	T2 ¹⁾	II A ⁷⁾	yes	PP, EX, A	0	
2048	DICYCLOPENTADIENE	3	F1	III	3+N2+F	N	3	3	2		95	0.94	3	yes	T1	II B ⁴⁾	yes	PP, EX, A	0	7; 17
2050	DIISOBUTYLENE, ISOMERIC COMPOUNDS	3	F1	II	3+N2+F	N	2	3		10	97	0.72	3	yes	T3 ²⁾	II A ⁷⁾	yes	PP, EX, A	1	
2051	2-DIMETHYLAMINO ETHANOL	8	CF1	II	8+3+N3	N	3	2			97	0.89	3	yes	T3	II A	yes	PP, EP, EX, A	1	34
2053	METHYL ISOBUTYL CARBINOL	3	F1	III	3	N	3	2			97	0.81	3	yes	T2	II B ⁴⁾	yes	PP, EX, A	0	
2054	MORPHOLINE	8	CF1	I	8+3+N3	N	3	2			97	1	3	yes	T3	II A	yes	PP, EP, EX, A	1	34
2055	STYRENE MONOMER, STABILIZED	3	F1	III	3+unst.+N3	N	3	2			97	0.91	3	yes	T1	II A	yes	PP, EX, A	0	3; 5; 16
2056	TETRAHYDROFURAN	3	F1	II	3	N	2	2		10	97	0.89	3	yes	T3	II B	yes	PP, EX, A	1	
2057	TRIPROPYLÈNE	3	F1	II	3	N	2	2		10	97	0.744	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
2057	TRIPROPYLENE	3	F1	III	3	N	3	2			97	0.73	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	0	
2078	TOLUENE DIISOCYANATE (and isomeric mixtures) (2,4- TOLUENE DIISOCYANATE)	6.1	T1	II	6.1+N2+S	C	2	2	2	25	95	1.22	2	no	T1	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	2; 7; 8; 17
2078	TOLUENE DIISOCYANATE (and isomeric mixtures) (2,4- TOLUENE DIISOCYANATE)	6.1	T1	II	6.1+N2+S	C	2	1	4	25	95	1.22	2	no			no	PP, EP, TOX, A	2	2; 7; 8; 17; 20: +112 °C; 26
2079	DIETHYLENTRIAMINE	8	C7	II	8+N3	N	4	2			97	0.96	3	yes			no	PP, EP	0	34
2187	CARBON DIOXIDE, REFRIGERATED LIQUID	2	3A		2.2	G	1	1	1		95		1	yes			no	PP	0	31,39
2205	ADIPONITRILE	6.1	T1	III	6.1	C	2	2		25	95	0.96	2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	17

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2206	ISOCYANATES, TOXIC, N.O.S. (4- CHLOROPHENYL ISOCYANATE)	6.1	T1	II	6.1+S	C	2	2	4	25	95	1.25	2	no			no	PP, EP, TOX, A	2	7; 17
2209	FORMALDEHYDE SOLUTION with not less than 25 % formaldehyde	8	C9	III	8+N3	N	4	2			97	1.09	3	yes			no	PP, EP	0	15; 34
2215	MALEIC ANHYDRIDE, MOLTEN	8	C3	III	8+N3	N	3	3	2		95	0.93	3	yes	T2	II B ⁴⁾	yes	PP, EP, EX, A	0	7; 17; 25; 34
2215	MALEIC ANHYDRIDE, MOLTEN	8	C3	III	8+N3	N	3	1	4		95	0.93	3	yes			no	PP, EP	0	7; 17; 20: +88 °C; 25; 34
2218	ACRYLIC ACID, STABILIZED	8	CF1	II	8+3+unst.+N1	C	2	2	4	30	95	1.05	1	yes	T2	II A ⁷⁾	yes	PP, EP, EX, A	1	3; 4; 5; 17
2227	n-BUTYL METHACRYLATE, STABILIZED	3	F1	III	3+unst.	C	2	2		25	95	0.9	1	yes	T3	II A	yes	PP, EX, A	0	3; 5
2238	CHLOROTOLUENES (m-CHLOROTOLUENE)	3	F1	III	3+N2+S	C	2	2		30	95	1.08	2	yes	T1	II A ⁷⁾	yes	PP, EX, A	0	
2238	CHLOROTOLUENES (o-CHLOROTOLUENE)	3	F1	III	3+S	C	2	2		30	95	1.08	2	yes	T1	II A ⁷⁾	yes	PP, EX, A	0	
2238	CHLOROTOLUENES (p-CHLOROTOLUENE)	3	F1	III	3+S	C	2	2		30	95	1.07	2	yes	T1	II A ⁷⁾	yes	PP, EX, A	0	6: +11 °C; 17
2241	CYCLOHEPTANE	3	F1	II	3+N2	N	2	3		10	97	0.81	3	yes	T4 ³⁾	II A	yes	PP, EX, A	1	
2247	n-DECANE	3	F1	III	3+F	C	2	2		30	95	0.73	2	yes	T4	II A	yes	PP, EX, A	0	
2248	DI-n-BUTYLAMINE	8	CF1	II	8+3+N3	N	3	2				0.76	3	yes	T3	II A ⁷⁾	yes	PP, EP, EX, A	1	34
2259	TRIETHYLENETETRAMINE	8	C7	II	8+N2	N	3	3			97	0.98	3	yes	T2	II B ⁴⁾	yes	PP, EP, EX, A	0	34
2263	DIMETHYLCYCLOHEXANES (cis-1,4- DIMETHYL-CYCLOHEXANE)	3	F1	II	3	C	2	2		35	95	0.78	2	yes	T4 ³⁾	II A ⁷⁾	yes	PP, EX, A	1	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2263	DIMETHYLCYCLOHEXANES (trans-1,4- DIMETHYL-CYCLOHEXANE)	3	F1	II	3	C	2	2		35	95	0.76	2	yes	T4 ³⁾	II A ⁷⁾	yes	PP, EX, A	1	
2264	N,N-DIMETHYL-CYCLOHEXYLAMINE	8	CF1	II	8+3+N2	N	3	3			97	0.85	3	yes	T3	II B ⁴⁾	yes	PP, EP, EX, A	1	34
2265	N,N-DIMETHYLFORMAMIDE	3	F1	III	3+CMR	N	2	3	3	10	97	0.95	3	yes	T2	II A	yes	PP, EX, A	0	
2266	DIMETHYL-N-PROPYLAMINE	3	FC	II	3+8	C	2	2	3	50	95	0.72	2	yes	T4	II A	yes	PP, EP, EX, A	1	23
2276	2-ETHYLHEXYLAMINE	3	FC	III	3+8+N3	N	3	2			97	0.79	3	yes	T3	II A ⁷⁾	yes	PP, EP, EX, A	0	34
2278	n-HEPTENE	3	F1	II	3+N3	N	2	2		10	97	0.7	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
2280	HEXAMETHYLENEDIAMINE, SOLID, MOLTEN	8	C8	III	8+N3	N	3	3	2		95	0.83	3	yes	T3	II B ⁴⁾	yes	PP, EP, EX, A	0	7; 17; 34
2280	HEXAMETHYLENEDIAMINE, SOLID, MOLTEN	8	C8	III	8+N3	N	3	3	4		95	0.83	3	yes			no	PP, EP	0	7; 17; 20: +66 °C; 34
2282	HEXANOLS	3	F1	III	3+N3	N	3	2			97	0.83	3	yes	T3	II A	yes	PP, EX, A	0	
2286	PENTAMETHYLHEPTANE	3	F1	III	3+F	N	3	3			97	0.75	3	yes	T2	II A ⁷⁾	yes	PP, EX, A	0	
2288	ISOHEXENES	3	F1	II	3+unst.	C	2	2	3	50	95	0.735	2	yes	T2	II B ⁴⁾	yes	PP, EX, A	1	3; 23
2289	ISOPHORONEDIAMINE	8	C7	III	8+N2	N	3	3			97	0.92	3	yes	T2	II A	yes	PP, EP, EX, A	0	17; 34
2302	5-METHYLHEXAN-2-ONE	3	F1	III	3	N	3	2			97	0.81	3	yes	T1	II A	yes	PP, EX, A	0	
2303	ISOPROPENYLBENZENE	3	F1	III	3+N2+F	N	3	3			97	0.91	3	yes	T2	II B	yes	PP, EX, A	0	
2309	OCTADIENE (1,7-OCTADIENE)	3	F1	II	3+N2	N	2	3		10	97	0.75	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
2311	PHENETIDINES	6.1	T1	III	6.1	C	2	2		25	95	1.07	2	no			no	PP, EP, TOX, A	0	6: +7 °C; 17
2312	PHENOL, MOLTEN	6.1	T1	II	6.1+N3+S	C	2	2	4	25	95	1.07	2	no	T1	II A ⁸⁾	yes	PP, EP, EX, TOX, A	2	7; 17
2312	PHENOL, MOLTEN	6.1	T1	II	6.1+N3+S	C	2	2	4	25	95	1.07	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +67 °C

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2320	TETRAETHYLENEPENTAMINE	8	C7	III	8+N2	N	4	3			97	1	3	yes			no	PP, EP	0	34
2321	TRICHLOROBENZENES, LIQUID (1,2,4-TRICHLOROBENZENE)	6.1	T1	III	6.1+N1+S	C	2	2	2	25	95	1.45	2	no	T1	II A	yes	PP, EP, EX, TOX, A	0	7; 17
2321	TRICHLOROBENZENES, LIQUID (1,2,4-TRICHLOROBENZENE)	6.1	T1	III	6.1+N1+S	C	2	1	4	25	95	1.45	2	no			no	PP, EP, TOX, A	0	7; 17; 20: +95 °C; 26
2323	TRIETHYL PHOSPHITE	3	F1	III	3	N	3	2			97	0.8	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	0	
2324	TRIIISOBTYLENE	3	F1	III	3+N1+F	C	2	2		35	95	0.76	2	yes	T2	II B ⁴⁾	yes	PP, EX, A	0	
2325	1,3,5-TRIMETHYLBENZENE	3	F1	III	3+N1	C	2	2		35	95	0.87	2	yes	T1	II A	yes	PP, EX, A	0	
2333	ALLYL ACETATE	3	FT1	II	3+6.1	C	2	2		40	95	0.93	2	no	T2	II A ⁷⁾	yes	PP, EP, EX, TOX, A	2	
2348	BUTYL ACRYLATES, STABILIZED (n- BUTYL ACRYLATE, STABILIZED)	3	F1	III	3+unst.+N3	C	2	2		30	95	0.9	1	yes	T3	II B	yes	PP, EX, A	0	3; 5
2350	BUTYL METHYL ETHER	3	F1	II	3	N	2	2		10	97	0.74	3	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	
2356	2-CHLOROPROPANE	3	F1	I	3	C	2	2	3	50	95	0.86	2	yes	T1	II A	yes	PP, EX, A	1	23
2357	CYCLOHEXYLAMINE	8	CF1	II	8+3+N3	N	3	2			97	0.86	3	yes	T3	II A ⁸⁾	yes	PP, EP, EX, A	1	34
2362	1,1-DICHLOROETHANE	3	F1	II	3+N2	C	2	2	3	50	95	1.17	2	yes	T2	II A	yes	PP, EX, A	1	23
2370	1-HEXENE	3	F1	II	3+N3	N	2	2		10	97	0.67	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	
2381	DIMÉTHYL DISULPHIDE	3	F1	II	3	C	2	2		40	95	1.063	2	yes	T2	IIB	yes	PP, EX, A	1	
2382	DIMETHYLHYDRAZINE, SYMMETRICAL	6.1	TF1	I	6.1+3+CMR	C	2	2		50	95	0.83	1	yes	T4 ³⁾	II C	yes	PP, EP, EX, TOX, A	2	
2383	DIPROPYLAMINE	3	FC	II	3+8	C	2	2		35	95	0.74	2	no	T3	II A	yes	PP, EP, EX, A	1	
2397	3-METHYLBUTAN-2-ONE	3	F1	II	3	N	2	2		10	97	0.81	3	yes	T1	II A	yes	PP, EX, A	1	
2398	METHYL tert-BUTYL ETHER	3	F1	II	3	N	2	2		10	97	0.74	3	yes	T1	II A	yes	PP, EX, A	1	
2404	PROPIONITRILE	3	FT1	II	3+6.1	C	2	2		45	95	0.78	2	no	T1 ⁹⁾	II A	yes	PP, EP, EX, TOX, A	2	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2414	THIOPHENE	3	F1	II	3+N3+S	N	2	3		10	97	1.06	3	yes	T2	II A	yes	PP, EX, A	1	
2430	ALKYLPHENOLS, SOLID, N.O.S. (NONYLPHENOL, ISOMERIC MIXTURE, MOLTEN)	8	C4	II	8+N1+F	C	2	1	2	25	95	0.95	2	yes	T2	II A ⁷⁾	yes	PP, EP, EX, A	0	7; 17
2430	ALKYLPHENOLS, SOLID, N.O.S. (NONYLPHENOL, ISOMERIC MIXTURE, MOLTEN)	8	C4	II	8+N1+F	C	2	2	4	25	95	0.95	2	yes			no	PP, EP	0	7; 17; 20: +125 °C
2432	N,N-DIETHYLANILINE	6.1	T1	III	6.1+N2	C	2	2		25	95	0.93	2	no			no	PP, EP, TOX, A	0	
2448	SULPHUR, MOLTEN	4.1	F3	III	4.1+S	N	4	1	4		95	2.07	3	yes			no	PP, EP, TOX*, A	0	* Toximeter for H2S; 7; 20: +150 °C; 28; 32
2458	HEXADIENES	3	F1	II	3+N3	N	2	2		10	97	0.72	3	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	
2477	METHYL ISOTHIOCYANATE	6.1	TF1	I	6.1+3+N1	C	2	2	2	35	95	1,07 ¹¹⁾	2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	7; 17
2485	n-BUTYL ISOCYANATE	6.1	TF1	I	6.1+3	C	2	2		35	95	0.89	1	no	T2	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	
2486	ISOBUTYL ISOCYANATE	6.1	TF1	I	6.1+3	C	2	2		40	95		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	
2487	PHENYL ISOCYANATE	6.1	TF1	I	6.1+3	C	2	2		25	95	1.1	1	no	T1	II A	yes	PP, EP, EX, TOX, A	2	
2490	DICHLOROISOPROPYL ETHER	6.1	T1	II	6.1	C	2	2		25	95	1.11	2	no			no	PP, EP, TOX, A	2	
2491	ETHANOLAMINE or ETHANOLAMINE SOLUTION	8	C7	III	8+N3	N	3	2			97	1.02	3	yes	T2	II B ⁴⁾	yes	PP, EP, EX, A	0	17; 34
2493	HEXAMETHYLENIMINE	3	FC	II	3+8+N3	N	3	2			97	0.88	3	yes	T3 ²⁾	II A	yes	PP, EP, EX, A	1	34
2496	PROPIONIC ANHYDRIDE	8	C3	III	8+N3	N	4	3			97	1.02	3	yes			no	PP, EP	0	34
2518	1,5,9-CYCLODODECATRIENE	6.1	T1	III	6.1+F	C	2	2		25	95	0.9	2	no			no	PP, EP, TOX, A	0	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2527	ISOBUTYL ACRYLATE, STABILIZED	3	F1	III	3+unst.	C	2	2		30	95	0.89	1	yes	T2	II B ⁹⁾	yes	PP, EX, A	0	3; 5
2528	ISOBUTYL ISOBUTYRATE	3	F1	III	3+N3	N	3	2			97	0.86	3	yes	T2	II A	yes	PP, EX, A	0	
2531	METHACRYLIC ACID, STABILIZED	8	C3	II	8+unst.+N3	C	2	2	4	25	95	1.02	1	yes	T2	II B ⁴⁾	yes	PP, EP, EX, A	0	3; 4; 5; 17
2564	TRICHLOROACETIC ACID SOLUTION	8	C3	II	8+N1	C	2	2	2	25	95	1,62 ¹¹⁾	2	yes	T1	II A ⁷⁾	yes	PP, EP, EX, A	0	7; 17; 22
2564	TRICHLOROACETIC ACID SOLUTION	8	C3	III	8+N1	C	2	2		25	95	1,62 ¹¹⁾	2	yes	T1	II A ⁷⁾	yes	PP, EP, EX, A	0	22
2574	TRICRESYL PHOSPHATE with more than 3% ortho isomer	6.1	T1	II	6.1+S	C	2	2		25	95	1.18	2	no			no	PP, EP, TOX, A	2	
2579	PIPERAZINE, MOLTEN	8	C8	III	8+N2	N	3	3	2		95	0.9	3	yes			no	PP, EP	0	7; 17; 34
2582	FERRIC CHLORIDE SOLUTION	8	C1	III	8	N	4	3			97	1.45	3	yes			no	PP, EP	0	22; 30; 34
2586	ALKYLSULPHONIC ACIDS, LIQUID or ARYLSULPHONIC ACIDS, LIQUID with not more than 5% free sulphuric acid	8	C3	III	8	N	4	3			97		3	yes			no	PP, EP	0	34
2608	NITROPROPANES	3	F1	III	3	N	3	2			97	1	3	yes	T2	II B ⁷⁾	yes	PP, EX, A	0	
2615	ETHYL PROPYL ETHER	3	F1	II	3	N	2	2		10	97	0.73	3	yes	T4 ³⁾	II A ⁷⁾	yes	PP, EX, A	1	
2618	VINYLTOLUENES, STABILIZED	3	F1	III	3+unst.+F	C	2	2		25	95	0.92	1	yes	T1	II B ⁴⁾	yes	PP, EX, A	0	3; 5
2651	4,4'-DIAMINO-DIPHENYLMETHANE	6.1	T2	III	6.1+N2+CMR+S	C	2	2	2	25	95	1	2	no			no	PP, EP, TOX, A	0	7; 17
2672	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia (more than 25% but not more than 35% ammonia)	8	C5	III	8+N1	C	2	2	1	50	95	0,88 ¹⁰⁾ – 0,96 ¹⁰⁾	2	yes			no	PP, EP	0	

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2672	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia (not more than 25% ammonia)	8	C5	III	8+N3	N	2	2		10	95	0,88 ¹⁰⁾ – 0,96 ¹⁰⁾	2	yes			no	PP, EP	0	
2683	AMMONIUM SULPHIDE SOLUTION	8	CFT	II	8+3+6.1	C	2	2		50	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	15; 16
2693	BISULPHITES, AQUEOUS SOLUTION, N.O.S.	8	C1	III	8	N	4	3			97		3	yes			no	PP, EP	0	27; 34
2709	BUTYLBENZENES	3	F1	III	3+N1+F	C	2	2		35	95	0.87	2	yes	T2	II A	yes	PP, EX, A	0	
2733	AMINES, FLAMMABLE, CORROSIVE, N.O.S. or POLYAMINES, FLAMMABLE, CORROSIVE, N.O.S. (2-AMINOBUTANE)	3	FC	II	3+8	C	2	2	3	50	95	0.72	2	yes	T4 ³⁾	II A	yes	PP, EP, EX, A	1	23
2735	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	8	C7	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
2735	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	8	C7	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
2735	AMINES, LIQUID, CORROSIVE, N.O.S. or POLYAMINES, LIQUID, CORROSIVE, N.O.S.	8	C7	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
2754	N-ETHYLTOLUIDINES (N-ETHYL-o-TOLUIDINE)	6.1	T1	II	6.1+F	C	2	2		25	95	0.94	2	no			no	PP, EP, TOX, A	2	
2754	N-ETHYLTOLUIDINES (N-ETHYL-m-TOLUIDINE)	6.1	T1	II	6.1+F	C	2	2		25	95	0.94	2	no			no	PP, EP, TOX, A	2	
2754	N-ETHYLTOLUIDINES (N-ETHYL-o-TOLUIDINE and N-ETHYL-m-TOLUIDINE MIXTURES)	6.1	T1	II	6.1+F	C	2	2		25	95	0.94	2	no			no	PP, EP, TOX, A	2	

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2754	N-ETHYLTOLUIDINES (N-ETHYL-p-TOLUIDINE)	6.1	T1	II	6.1+F	C	2	2	2	25	95	0.94	2	no			no	PP, EP, TOX, A	2	7; 17
2785	4-THIAPENTANAL (3-MÉTHYLMERCAPTO-PROPIONALDÉHYDE)	6.1	T1	III	6.1	C	2	2		25	95	1.04	2	no			no	PP, EP, TOX, A	0	
2789	ACETIC ACID, GLACIAL or ACETIC ACID SOLUTION, more than 80 % acid, by mass	8	CF1	II	8+3	N	2	3	2	10	95	1,05 with 100% acid	3	yes	T1	II A	yes	PP, EP, EX, A	1	7; 17; 34
2790	ACETIC ACID SOLUTION, not less than 50 % but not more than 80 % acid, by mass	8	C3	II	8	N	2	3		10	95		3	yes			no	PP, EP	0	34
2790	ACETIC ACID SOLUTION, more than 10 % and less than 50 % acid, by mass	8	C3	III	8	N	2	3		10	95		3	yes			no	PP, EP	0	34
2796	BATTERY FLUID, ACID	8	C1	II	8+N3	N	4	3			97	1,00 - 1,84	3	yes			no	PP, EP	0	8; 22; 30; 34
2796	SULPHURIC ACID with not more than 51 % acid	8	C1	II	8+N3	N	4	3			97	1,00 - 1,41	3	yes			no	PP, EP	0	8; 22; 30; 34
2797	BATTERY FLUID, ALKALI	8	C5	II	8+N3	N	4	3			97	1,00 - 2,13	3	yes			no	PP, EP	0	22; 30; 34
2810	TOXIC LIQUID, ORGANIC, N.O.S.	6.1	T1	I	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
2810	TOXIC LIQUID, ORGANIC, N.O.S.	6.1	T1	II	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
2810	TOXIC LIQUID, ORGANIC, N.O.S.	6.1	T1	III	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	0	27; 29 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,2,3-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	2	2	25	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	7; 17; 22
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,2,3-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	1	4	25	95		2	no			no	PP, EP, TOX, A	0	7; 17; 20: +92 °C; 22; 26
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,3,5-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	2	2	25	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	7; 17; 22
2811	TOXIC SOLID, ORGANIC, N.O.S. (1,3,5-TRICHLOROBENZENE, MOLTEN)	6.1	T2	III	6.1+S	C	2	1	4	25	95		2	no			no	PP, EP, TOX, A	0	7; 17; 20: +92 °C; 22; 26
2815	N-AMINOETHYL PIPERAZINE	8	C7	III	8+N2	N	4	3			97	0.98	3	yes			no	PP, EP	0	34
2820	BUTYRIC ACID	8	C3	III	8+N3	N	2	3		10	97	0.96	3	yes			no	PP, EP	0	34
2829	CAPROIC ACID	8	C3	III	8+N3	N	4	3			97	0.92	3	yes			no	PP, EP	0	34
2831	1,1,1-TRICHLOROETHANE	6.1	T1	III	6.1+N2	C	2	2	3	50	95	1.34	2	no			no	PP, EP, TOX, A	0	23
2850	PROPYLENE TETRAMER	3	F1	III	3+N1+F	C	2	2		35	95	0.76	2	yes			no	PP	0	
2874	FURFURYL ALCOHOL	6.1	T1	III	6.1+N3	C	2	2		25	95	1.13	2	no			no	PP, EP, TOX, A	0	
2904	PHENOLATES, LIQUID	8	C9	III	8	N	4	2			97	1,13-1,18	3	yes			no	PP, EP	0	34
2920	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (2-PROPANOL AND DIDECYLDIMETHYL-AMMONIUM CHLORIDE, AQUEOUS SOLUTION)	8	CF1	II	8+3+F	N	3	3			95	0.95	3	yes	T3	II A	yes	PP, EP, EX, A	1	34;

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2920	CORROSIVE LIQUID, FLAMMABLE, N.O.S. (AQUEOUS SOLUTION OF HEXADECYLTRIMETHYL-AMMONIUM CHLORIDE (50 %) AND ETHANOL (35 %))	8	CF1	II	8+3+F	N	2	3		10	95	0.9	3	yes	T2	II B	yes	PP, EP, EX, A	1	6: +7 °C; 17; 34;
2922	CORROSIVE LIQUID, TOXIC, N.O.S.	8	CT1	I	8+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
2922	CORROSIVE LIQUID, TOXIC, N.O.S.	8	CT1	II	8+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
2922	CORROSIVE LIQUID, TOXIC, N.O.S.	8	CT1	III	8+6.1+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	0	27; 29 *see flowchart
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S.	3	FC	I	3+8+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, A	1	27; 29 *see flowchart
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S.	3	FC	II	3+8+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, A	1	27; 29 *see flowchart
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S.	3	FC	III	3+8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, A	0	27; 34 *see flowchart
2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (AQUEOUS SOLUTION OF DIALKYL-(C ₈ -C ₁₈)-DIMETHYLAMMONIUM CHLORIDE AND 2-PROPANOL)	3	FC	II	3+8+F	C	2	2		50	95	0.88	2	yes	T2	II A	yes	PP, EP, EX, A	1	
2927	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S.	6.1	TC1	I	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
2927	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S.	6.1	TC1	II	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
2929	TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.	6.1	TF1	I	6.1+3+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29 *see flowchart
2929	TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S.	6.1	TF1	II	6.1+3+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29 *see flowchart
2935	ETHYL-2-CHLORO-PROPIONATE	3	F1	III	3	C	2	2		30	95	1.08	2	yes	T4 ³⁾	II A	yes	PP, EX, A	0	
2947	ISOPROPYL CHLOROACETATE	3	F1	III	3	C	2	2		30	95	1.09	2	yes	T4 ³⁾	II A	yes	PP, EX, A	0	
2966	THIOGLYCOL	6.1	T1	II	6.1	C	2	2		25	95	1.12	2	no			no	PP, EP, TOX, A	2	
2983	ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE, with not more than 30% ethylene oxide	3	FT1	I	3+6.1+unst.	C	1	1	3		95	0.85	1	no	T2	II B	yes	PP, EP, EX, TOX, A	2	2; 3; 12; 31
2984	HYDROGEN PEROXIDE AQUEOUS SOLUTION with not less than 8%, but less than 20% hydrogen peroxide (stabilized as necessary)	5.1	O1	III	5.1+unst.	C	2	2		35	95	1.06	2	yes			no	PP	0	3; 33
3077	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., MOLTEN, (ALKYLAMINE (C ₁₂ to C ₁₈))	9	M7	III	9+F	N	4	3	2		95	0.79	3	yes			no	PP	0	7; 17
3079	METHACRYLONITRILE, STABILIZED	6.1	TF1	I	6.1+3+unst.+ N3	C	2	2		45	95	0.8	1	no	T1	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	3; 5
3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9	M6	III	9+(N1, N2, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP	0	22; 27 * see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BILGE WATER)	9	M6	III	9+N2+F	N	4	3			97		3	yes			no	PP	0	
3092	1-METHOXY-2-PROPANOL	3	F1	III	3	N	3	2			97	0.92	3	yes	T3	II B	yes	PP, EX, A	0	
3145	ALKYLPHENOLS, LIQUID, N.O.S. (including C ₂ -C ₁₂ homologues)	8	C3	II	8+N3	N	4	3			97	0.95	3	yes			no	PP, EP	0	34
3145	ALKYLPHENOLS, LIQUID, N.O.S. (including C ₂ -C ₁₂ homologues)	8	C3	III	8+N3	N	4	3			97	0.95	3	yes			no	PP, EP	0	34
3175	SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S., MOLTEN, having a flash-point up to 60 °C (2- PROPANOL AND DIALKYL-(C ₁₂ to C ₁₈)-DIMETHYLAMMONIUM CHLORIDE)	4.1	F1	II	4.1	N	3	3	4		95	0.86	3	yes	T2	II A	yes	PP, EX, A	1	7; 17
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point	3	F2	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	95		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	7; 27 *see flowchart
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (CARBON BLACK REEDSTOCK) (PYROLYSIS OIL)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (PYROLYSIS OIL A)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (RESIDUAL OIL)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (MIXTURE OF CRUDE NAPHTHALINE)	3	F2	III	3+F	N	3	3	2		95		3	yes	T 1	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (CREOSOTE OIL)	3	F2	III	3+N1+F	C	2	2	2	10	95		2	yes	T 2	II B	yes	PP, EX, A	0	7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flash-point above 60 °C, at or above its flash-point (Low QI Pitch)	3	F2	III	3+N2+CMR+S	N	3	1	4		95	1,1-1,3	3	yes	T2	II B	yes	PP, EX, A	0	7
3257	ELEVATED TEMPERATURE LIQUID, N.O.S. at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.)	9	M9	III	9+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	95		*	yes			no	PP	0	7; 20:+115 °C; 22; 24; 25; 27 *see flowchart
3257	ELEVATED TEMPERATURE LIQUID, N.O.S. at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.)	9	M9	III	9+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	95		*	yes			no	PP	0	7; 20:+225 °C; 22; 24; 27 *see flowchart
3259	AMINES, SOLID, CORROSIVE, N.O.S. (MONOALKYL-(C ₁₂ to C ₁₈)-AMINE ACETATE, MOLTEN)	8	C8	III	8	N	4	3	2		95	0.87	3	yes			no	PP, EP	0	7; 17; 34

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	C1	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	C1	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.	8	C1	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID)	8	C1	I	8	N	2	3		10	97		3	yes			no	PP, EP	0	34
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID)	8	C1	II	8	N	4	3			97		3	yes			no	PP, EP	0	34
3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID)	8	C1	III	8	N	4	3			97		3	yes			no	PP, EP	0	34
3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	C3	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	C3	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3265	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	8	C3	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	C5	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	C5	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3266	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	8	C5	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3267	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	C7	I	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3267	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	C7	II	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3267	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.	8	C7	III	8+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP, EP	0	27; 34 *see flowchart
3271	ETHERS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14, 27; 29 *see flowchart
3271	ETHERS, N.O.S. (tert- AMYL-METHYL ETHER)	3	F1	II	3+N1	C	2	2	3	50	95	0.77	2	yes	T2	II B ⁴⁾	yes	PP, EX, A	1	
3271	ETHERS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14, 27 *see flowchart
3272	ESTERS, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T2	II B ⁴⁾	yes	PP, EX, A	1	14, 27; 29 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3272	ESTERS, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14, 27 *see flowchart
3276	NITRILES, TOXIC, LIQUID, N.O.S. (2-METHYLGLUTARONITRILE)	6.1	T1	II	6.1	C	2	2		10	95	0.95	2	no			no	PP, EP, TOX, A	2	
3286	FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.	3	FTC	I	3+6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29 *see flowchart
3286	FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.	3	FTC	II	3+6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	27; 29 *see flowchart
3287	TOXIC LIQUID, INORGANIC, N.O.S.	6.1	T4	I	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		1	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
3287	TOXIC LIQUID, INORGANIC, N.O.S.	6.1	T4	II	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
3287	TOXIC LIQUID, INORGANIC, N.O.S.	6.1	T4	III	6.1+(N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	0	27; 29 *see flowchart
3287	TOXIC LIQUID, INORGANIC, N.O.S. (SODIUM DICHROMATE SOLUTION)	6.1	T4	III	6.1+CMR	C	2	2		30	95	1.68	2	no			no	PP, EP, TOX, A	0	
3289	TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. BOILING POINT > 115 °C	6.1	TC3	I	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3289	TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. BOILING POINT > 115 °C	6.1	TC3	II	6.1+8+ (N1, N2, N3, CMR, F or S)	C	2	2	*	*	95		2	no			no	PP, EP, TOX, A	2	27; 29 *see flowchart
3295	HYDROCARBONS, LIQUID, N.O.S. CONTAINS ISOPRENE AND PENTADIENE (vp 50 > 110 kPa), STABILIZED	3	F1	I	3, unst. (N2, CMR)	C	2	2	3	50	95	0,678	1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	3, 27, 29
3295	HYDROCARBONS, LIQUID, N.O.S.	3	F1	I	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14, 27; 29 *see flowchart
3295	HYDROCARBONS, LIQUID, N.O.S.	3	F1	II	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	14, 27; 29 *see flowchart
3295	HYDROCARBONS, LIQUID, N.O.S.	3	F1	III	3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	14, 27 *see flowchart
3295	HYDROCARBONS, LIQUID, N.O.S. (1-OCTEN)	3	F1	II	3+N2+F	N	2	3		10	97	0.71	3	yes	T3	II B ⁴⁾	yes	PP, EX, A	1	14
3295	HYDROCARBONS, LIQUID, N.O.S. (POLYCYCLIC AROMATIC HYDROCARBONS MIXTURE)	3	F1	III	3+CMR+F	N	2	3	3	10	97	1.08	3	yes	T1	II A	yes	PP, EX, A	0	14
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 > 175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < vp50 ≤ 175 kPa	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE vp50 ≤ 110 kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa BOILING POINT ≤ 60 °C	3	F1	I	3+CMR	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE 110 kPa < $vp_{50} \leq 175$ kPa	3	F1	II	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR	C	1	1			95		1	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa BOILING POINT ≤ 60 °C	3	F1	II	3+CMR	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29; 38
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	II	3+CMR	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	23; 27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	II	3+CMR	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa BOILING POINT > 115 °C	3	F1	II	3+CMR	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	1	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa 60 °C < BOILING POINT ≤ 85 °C	3	F1	III	3+CMR	C	2	2	3	50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	23; 27; 29

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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa 85 °C < BOILING POINT ≤ 115 °C	3	F1	III	3+CMR	C	2	2		50	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	27; 29
3295	HYDROCARBONS, LIQUID, N.O.S. WITH MORE THAN 10 % BENZENE $vp_{50} \leq 110$ kPa BOILING POINT > 115 °C	3	F1	III	3+CMR	C	2	2		35	95		2	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	27; 29
3412	FORMIC ACID with not less than 10% but not more than 85% acid by mass	8	C3	II	8+N3	N	2	3		10	97	1.22	3	yes	T1	II A	yes	PP, EP, EX, A	0	6: +12 °C; 17; 34
3412	FORMIC ACID with not less than 5% but less than 10% acid by mass	8	C3	III	8	N	2	3		10	97	1.22	3	yes	T1	II A	yes	PP, EP, EX, A	0	6: +12 °C; 17; 34
3426	ACRYLAMIDE, SOLUTION	6.1	T1	III	6.1	C	2	2		30	95	1.03	2	no			no	PP, EP, TOX, A	0	3; 5; 16
3429	CHLOROTOLUIDINES, LIQUID	6.1	T1	III	6.1+S	C	2	2		25	95	1.15	2	no	T1	II A ⁷⁾	yes	PP, EP, EX, TOX, A	0	6: +6 °C; 17;
3446	NITROTOLUENES, SOLID, MOLTEN (p-NITROTOLUENE)	6.1	T2	II	6.1+S	C	2	2	2	25	95	1.16	2	no	T2	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	7; 17
3446	NITROTOLUENES, SOLID, MOLTEN (p-NITROTOLUENE)	6.1	T2	II	6.1+S	C	2	1	4	25	95	1.16	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +88 °c; 26
3451	TOLUIDINES, SOLID, MOLTEN (p-TOLUIDINE)	6.1	T2	II	6.1	C	2	2	2	25	95	1.05	2	no	T1	II A ⁸⁾	yes	PP, EP, EX, TOX, A	2	7; 17
3451	TOLUIDINES, SOLID, MOLTEN (p-TOLUIDINE)	6.1	T2	II	6.1	C	2	2	4	25	95	1.05	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +60 °C
3455	CRESOLS, SOLID, MOLTEN	6.1	TC2	II	6.1+8	C	2	2	2	25	95	1,03 - 1,05	2	no	T1	II A ⁸⁾	yes	PP, EP, EX, TOX, A	2	7; 17
3455	CRESOLS, SOLID, MOLTEN	6.1	TC2	II	6.1+8	C	2	2	4	25	95	1,03 - 1,05	2	no			no	PP, EP, TOX, A	2	7; 17; 20: +66 °C

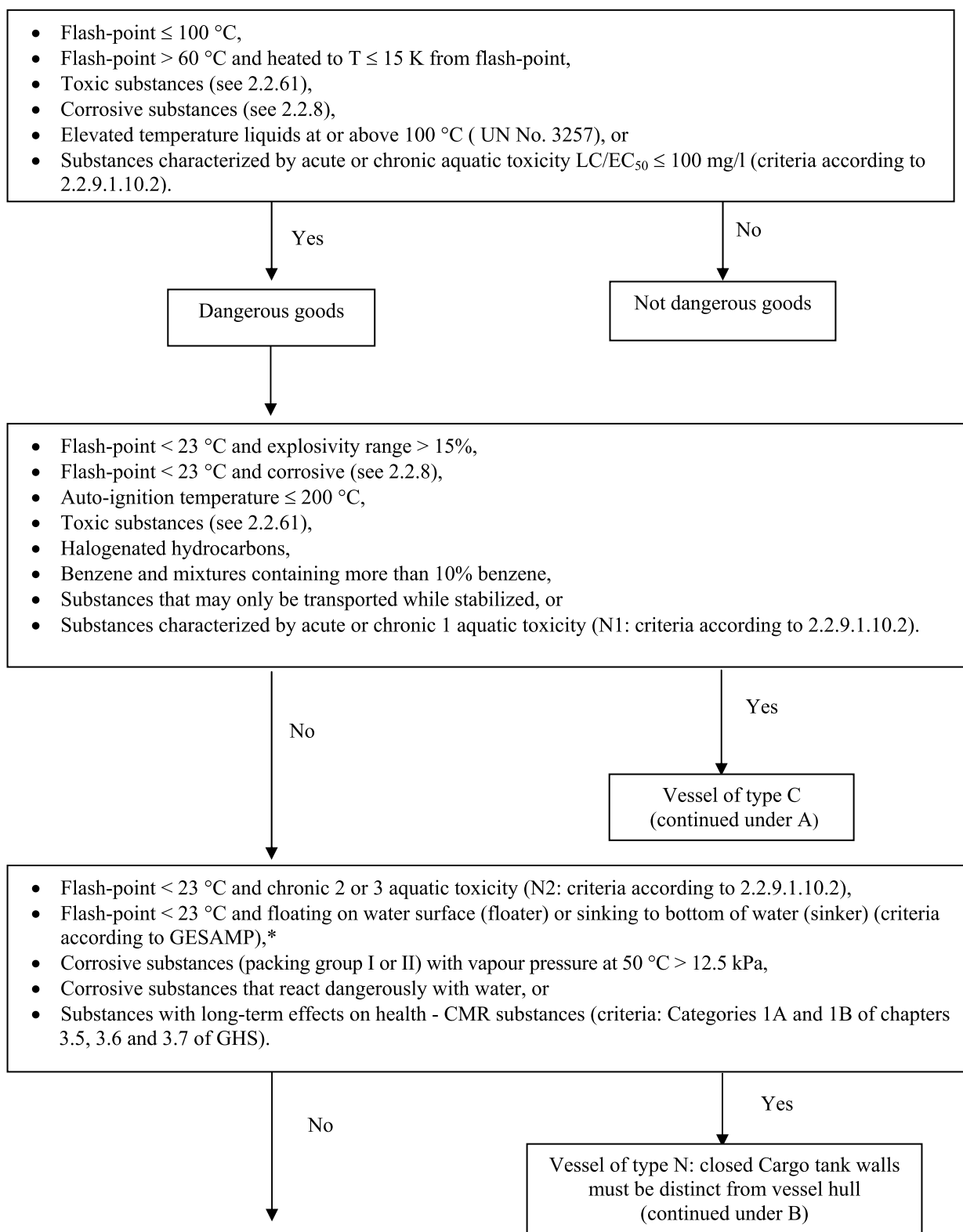
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(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
3463	PROPIONIC ACID with not less than 90% acid by mass	8	CF1	II	8+3+N3	N	3	3			97	0.99	3	yes	T1	II A ⁷⁾	yes	PP, EP, EX, A	1	34
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	TF1	I	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		1	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	14; 27; *See flowchart
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	TF1	II	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	2	14; 27; *See flowchart
3494	PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC	3	TF1	III	3+6.1+(N1, N2, N3, CMR, F)	C	*	*	*	*	95		2	no	T4 ³⁾	II B ⁴⁾	yes	PP, EP, EX, TOX, A	0	14; 27; *See flowchart
9000	AMMONIA, ANHYDROUS, DEEPLY REFRIGERATED	2	3TC		2.1+2.3+8+N1	G	1	1	1; 3		95		1	no	T1	II A	yes	PP, EP, EX, TOX, A	2	1; 31
9001	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C handed over for carriage or carried at a TEMPERATURE WITHIN A RANGE OF 15K BELOW THE IR FLASH-POINT OR SUBSTANCES WITH A FLASH-POINT > 60 °C, HEATED TO LESS THAN 15 K FROM THE FLASH-POINT	3	F 3		3+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes	T4 ³⁾	II B ⁴⁾	yes	PP, EX, A	0	27 *see flowchart
9002	SUBSTANCES HAVING A SELF-IGNITION TEMPERATURE ≤ 200 °C, N.O.S.	3	F4		3+(N1, N2, N3, CMR, F or S)	C	1	1	*	*	95		1	yes	T4	II B ⁴⁾	yes	PP, EX, A	0	*see flowchart
9003	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C BUT NOT MORE THAN 100 °C or SUBSTANCES WHERE 60° C < flash- point ≤ 100° C, which are not affected to another class	9			9+(N1, N2, N3, CMR, F or S)	*	*	*	*	*	*		*	yes			no	PP	0	27 *see flowchart

UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the high-velocity vent valve in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
9003	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C BUT NOT MORE THAN 100 °C or SUBSTANCES WHERE 60° C < flash- point ≤ 100 °C, which are not affected to another class (ETHYLENE GLYCOL MONOBUTYL ETHER)	9			9+N3+F	N	4	3			97	0.9	3	yes			no	PP	0	
9003	SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C BUT NOT MORE THAN 100 °C or SUBSTANCES WHERE 60° C < flash- point ≤ 100 °C, which are not affected to another class (2-ETHYLHEXYLACRYLATE)	9			9+N3+F	N	4	3			97	0.89	3	yes			no	PP	0	3; 5; 16;
9004	DIPHENYLMETHANE- 4,4'-DIISOCYANATE	9			S	N	2	3	4	10	95	1,21 ⁽¹⁾	3	yes			no	PP	0	7; 8; 17; 19
9005	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S, MOLTEN	9			9+(N2, N3, CMR, F or S)	*	*	*	*	*	97		*	yes			no	PP	0	*see flowchart
9006	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	9			9+(N2, N3, CMR, F or S)	*	*	*	*	*	97		*	yes			no	PP	0	*see flowchart

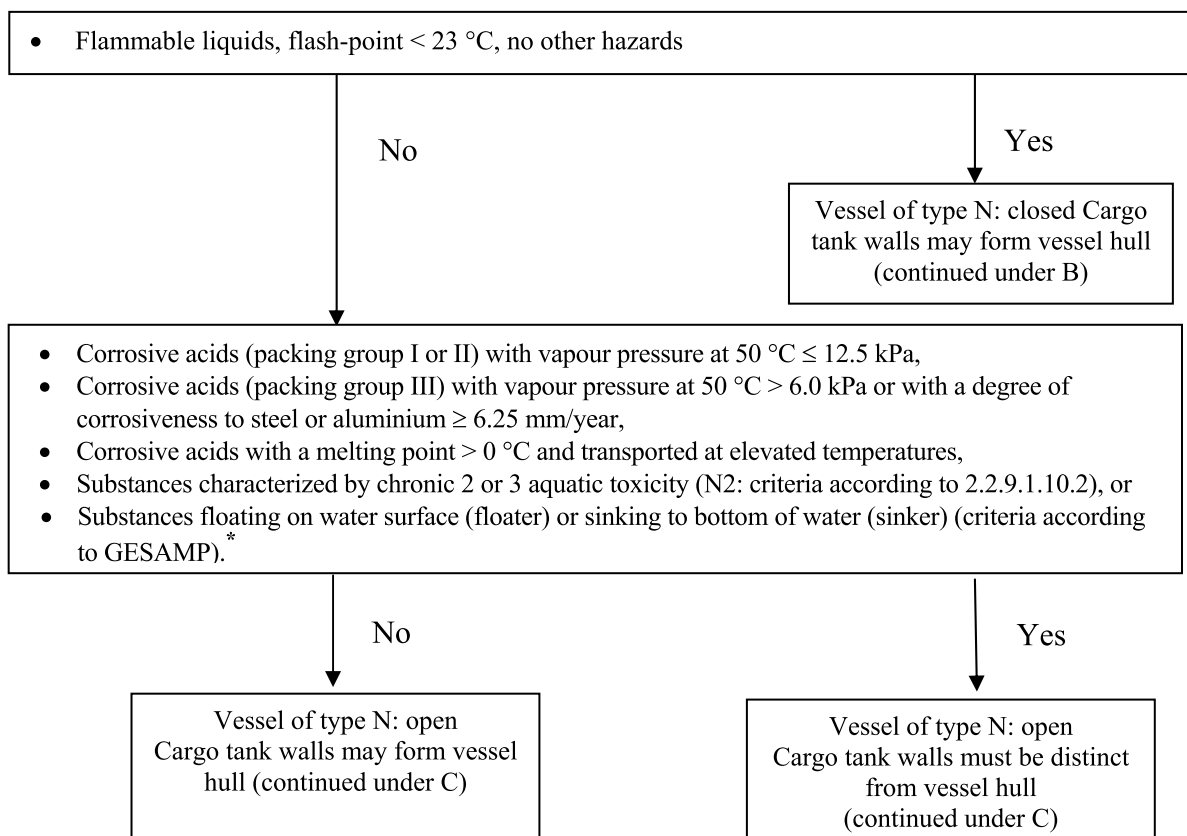
Footnotes related to the list of substances

- 1) The ignition temperature has not been determined in accordance with IEC 79-4; therefore, provisional assignment has been made to temperature class T2 which is considered safe.
- 2) The ignition temperature has not been determined in accordance with IEC 79-4; therefore, provisional assignment has been made to temperature class T3 which is considered safe.
- 3) The ignition temperature has not been determined in accordance with IEC 79-IA; therefore, provisional assignment has been made to temperature class T4 which is considered safe.
- 4) No maximum experimental safe gap (MESG) has been measured in accordance with IEC 79-1A; therefore, provisional assignment has been made to explosion group IIB which is considered safe.
- 5) No maximum experimental safe gap (MESG) has been measured in accordance with IEC 79-1A; therefore, provisional assignment has been made to explosion group IIC which is considered safe.
- 6) *(Deleted)*
- 7) No maximum experimental safe gap (MESG) has been measured in accordance with IEC-79-1A; therefore, assignment has been made to the explosion group which is considered safe.
- 8) No maximum experimental safe gap (MESG) has been measured in accordance with IEC 79-1A; therefore, assignment has been made to the explosion group in compliance with EN 50014.
- 9) Assignment in accordance with IMO IBC Code.
- 10) Relative density at 15 °C.
- 11) Relative density at 25 °C.
- 12) *(Deleted)*
- 13) *(Deleted)*

Flowchart for classification of liquids of Classes 3, 6.1, 8 and 9 for carriage in tanks in inland navigation



* IMO publication: "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", GESAMP Reports and Studies No. 64, IMO, London, 2002.



Elevated temperature substances

Irrespective of the above classifications, for substances that must be transported at elevated temperatures, the type of cargo tank shall be determined on the basis of the transport temperature, using the following table:

Maximum transport temperature T in °C	Type N	Type C
T ≤ 80	Integral cargo tank	Integral cargo tank
80 < T ≤ 115	Independent cargo tank, remark 25	Independent cargo tank, remark 26
T > 115	Independent cargo tank	Independent cargo tank

Remark 25 = remark No. 25 in column (20) of the list of substances contained in Chapter 3.2, Table C.

Remark 26 = remark No. 26 in column (20) of the list of substances contained in Chapter 3.2, Table C.

* IMO publication: "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", GESAMP Reports and Studies No. 64, IMO, London, 2002.

Scheme A: Criteria for cargo tank equipment in vessels of type C

Cargo tank equipment	Cargo tank internal pressure at liquid temperature of 30 °C and gaseous phase temperature of 37.8 °C > 50 kPa	Cargo tank internal pressure at liquid temperature of 30 °C and gaseous phase temperature of 37.8 °C > 50 kPa	Cargo tank internal pressure unknown, owing to absence of certain data
With refrigeration (No. 1 in column (9))	Refrigerated		
Pressure tank (400 kPa)	Non-refrigerated	Cargo tank internal pressure at 50 °C > 50 kPa without water spraying	Boiling point ≤ 60°C
High-velocity vent valve opening pressure: 50 kPa, with water-spraying system (No. 3 in column (9))		Cargo tank internal pressure at 50 °C > 50 kPa with water spraying	60 °C < boiling point ≤ 85°C
High-velocity vent valve opening pressure as calculated, but at least 10 kPa		Cargo tank internal pressure at 50 °C ≤ 50 kPa	
High-velocity vent valve opening pressure: 50 kPa			85 °C < boiling point ≤ 115°C
High-velocity vent valve opening pressure: 35 kPa			Boiling point > 115°C

Scheme B: Criteria for equipment of vessels of type N with closed cargo tanks

Cargo tank equipment	Class 3, flash-point < 23°C				Corrosive substances	CMR substances
Pressure tank (400 kPa)	$175 \text{ kPa} \leq P_{d50} < 300 \text{ kPa}$ without refrigeration					
High-velocity vent valve opening pressure: 50 kPa	$175 \text{ kPa} \leq P_{d50} < 300 \text{ kPa}$, with refrigeration (No. 1 in column (9))	$110 \text{ kPa} \leq P_{d50} < 175 \text{ kPa}$ without water spraying				
High-velocity vent valve opening pressure: 10 kPa			$110 \text{ kPa} \leq P_{d50} < 150 \text{ kPa}$ with water spraying (No. 3 in column (9))	$P_{d50} < 110 \text{ kPa}$	Packing group I or II with $P_{d50} > 12.5 \text{ kPa}$ or reacting dangerously with water	High-velocity vent valve opening pressure: 10 kPa; with water spraying when vapour pressure > 10 kPa (calculation of the vapour pressure according to the formula for column 10, except that $v_a = 0.03$)

Scheme C: Criteria for equipment of vessels of type N with open cargo tanks

Cargo tank equipment	Classes 3 and 9	Flammable substances	Corrosive substances
With flame-arrester	$60 \text{ °C} < \text{flash-point} \leq 100 \text{ °C}$ or elevated temperature substances of Class 9	Flash-point > 60 °C transported while heated to $\leq 15 \text{ K}$ below flash-point or at or above their flash-point	Flammable substances or acids, transported while heated
Without flame-arrester			Non-flammable substances

Column (9): Cargo tank equipment for substances transported in a molten state

– **Possibility of heating the cargo (number 2 in column (9))**

A possibility of heating the cargo shall be required on board:

- When the melting point of the substance to be transported is + 15 °C or greater,
or
- When the melting point of the substance to be transported is greater than 0 °C but less than + 15 °C and the outside temperature is no more than 4 K above the melting point. In column (20), reference shall be made to remark 6 with the temperature derived as follows: melting point + 4 K

– **Heating system on board (number 4 in column (9))**

A cargo heating system shall be required on board:

- For substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating, and
- For substances that must be maintained at a guaranteed temperature not less than 15 K below their flash-point

Column (10): Determination of opening pressure of high-velocity vent valve in kPa

For vessels of type C, the opening pressure of the high-velocity vent valve shall be determined on the basis of the internal pressure of the tanks, rounded up to the nearest 5 kPa

To calculate the internal pressure, the following formula shall be used:

$$P_{\max} = P_{Ob\max} + \frac{k \cdot v_a (P_0 - P_{Da})}{v_a - \alpha \cdot \delta_t + \alpha \cdot \delta_t \cdot v_a} - P_0$$

$$k = \frac{T_{D\max}}{T_a}$$

In this formula:

- P_{\max} : Maximum internal pressure in kPa
- $P_{Ob\max}$: Absolute vapour pressure at maximum liquid surface temperature in kPa
- P_{Da} : Absolute vapour pressure at filling temperature in kPa
- P_0 : Atmospheric pressure in kPa
- v_a : Free relative volume at filling temperature compared with cargo tank volume
- α : Cubic expansion coefficient in K^{-1}
- δ_t : Average temperature increase of the liquid due to heating in K
- $T_{D\max}$: Maximum gaseous phase temperature in K
- T_a : Filling temperature in K
- k : Temperature correction factor
- t_{Ob} : Maximum liquid surface temperature in °C

In the formula, the following basic data are used:

P_{Obmax}	:	At 50 °C and 30 °C
P_{Da}	:	At 15 °C
P_0	:	101.3 kPa
v_a	:	5% = 0.05
δ_t	:	5 K
T_{Dmax}	:	323 K and 310.8 K
T_a	:	288 K
t_{Ob}	:	50 °C and 30 °C

Column (11): Determination of maximum degree of filling of cargo tanks

If, in accordance with the provisions under A above:

- Type G is required: 91%; however, in the case of deeply refrigerated substances: 95%
- Type C is required: 95%
- Type N is required: 97%; however, in the case of substances in a molten state and of flammable liquids with $175 \text{ kPa} \leq P_{v50} < 300 \text{ kPa}$: 95%

Column (12): Relative density of substance at 20 °C

These data are provided for information only.

Column (13): Determination of type of sampling device

- | | | |
|----------------------------|---|--|
| 1 = <i>closed</i> : | – | Substances to be transported in pressure cargo tanks |
| | – | Substances with T in column (3b) and assigned to packing group I |
| | – | Stabilized substances to be transported under inert gas |
| 2 = <i>partly closed</i> : | – | All other substances for which type C is required |
| 3 = <i>open</i> : | – | All other substances |

Column (14): Determination of whether a pump-room is permitted below deck

- | | | |
|-----|---|--|
| No | – | All substances with T in column (3b) with the exception of substances of Class 2 |
| Yes | – | All other substances |

Column (15): Determination of temperature class

Flammable substances shall be assigned to a temperature class on the basis of their auto-ignition point:

Temperature class	Auto-ignition temperature T of flammable liquids and gases in °C
T1	$T > 450$
T2	$300 < T \leq 450$
T3	$200 < T \leq 300$
T4	$135 < T \leq 200$
T5	$100 < T \leq 135$
T6	$85 < T \leq 100$

When anti-explosion protection is required and the auto-ignition temperature is not known, reference shall be made to temperature class T4, considered safe

Column (16): Determination of explosion group

Flammable substances shall be assigned to an explosion group on the basis of their maximum experimental safe gaps. The maximum experimental safe gaps shall be determined in accordance with standard IEC 60079-1-1.

The different explosion groups are as follows:

Explosion group	Maximum experimental safe gap in mm
II A	> 0.9
II B	≥ 0.5 to ≤ 0.9
II C	< 0.5

When anti-explosion protection is required and the relevant data are not provided, reference shall be made to explosion group II B, considered safe

Column (17): Determination of whether anti-explosion protection is required for electrical equipment and systems

- Yes
- Substances with a flash-point ≤ 60 °C
 - Substances that must be transported while heated to a temperature less than 15 K from their flash-point
 - Flammable gases
- No
- All other substances

Column (18): Determination of whether personal protective equipment, escape devices, portable flammable gas detectors, portable toximeters or ambient-air-dependent breathing apparatus is required

- PP: For all substances of Classes 1 to 9;
- EP:
 - of Class 2 with letter T or letter C in the classification code indicated in column (3b),
 - of Class 3 with letter T or letter C in the classification code indicated in column (3b),
 - of Class 4.1,

- of Class 6.1, and
- of Class 8,
- CMR substances of Category 1A or 1B according to GHS;
- EX: For all substances for which anti-explosion protection is required;
- TOX: For all substances of Class 6.1,
For all substances of other classes with T in column (3b),
For CMR substances of Category 1A or 1B according to GHS;
- A: For all substances for which EX or TOX is required

Column (19): Determination of the number of cones or blue lights

For all substances of Class 2 with letter F in the classification code indicated in column (3b):	1 cone/light
For all substances of Classes 3 to 9 with letter F in the classification code indicated in column (3b) and assigned to packing group I or II: For all substances of Class 2 with letter T in the classification code indicated in column (3b)	1 cone/light 2 cones/lights
For all substances of Classes 3 to 9 with letter T in the classification code indicated in column (3b) and assigned to packing group I or II:	2 cones/lights

Column (20): Determination of additional requirements and remarks

- Remark 1:** Reference shall be made in column (20) to remark 1 for transport of UN No. 1005 AMMONIA, ANHYDROUS.
- Remark 2:** Reference shall be made in column (20) to remark 2 for stabilized substances that react with oxygen.
- Remark 3:** Reference shall be made in column (20) to remark 3 for substances that must be stabilized.
- Remark 4:** Reference shall be made in column (20) to remark 4 for substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating.
- Remark 5:** Reference shall be made in column (20) to remark 5 for substances liable to polymerization.
- Remark 6:** Reference shall be made in column (20) to remark 6 for substances liable to crystallization and for substances for which a heating system or possibility of heating is required and the vapour pressure of which at 20 °C is greater than 0.1 kPa.
- Remark 7:** Reference shall be made in column (20) to remark 7 for substances with a melting point of + 15 °C or greater.
- Remark 8:** Reference shall be made in column (20) to remark 8 for substances that react dangerously with water.
- Remark 9:** Reference shall be made in column (20) to remark 9 for transport of UN No. 1131 CARBON DISULPHIDE.
- Remark 10:** *No longer used.*

- Remark 11:** Reference shall be made in column (20) to remark 11 for transport of UN No. 1040 ETHYLENE OXIDE WITH NITROGEN.
- Remark 12:** Reference shall be made in column (20) to remark 12 for transport of UN No. 1280 PROPYLENE OXIDE and UN No. 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE.
- Remark 13:** Reference shall be made in column (20) to remark 13 for transport of UN No. 1086 VINYL CHLORIDE, STABILIZED.
- Remark 14:** Reference shall be made in column (20) to remark 14 for mixtures or N.O.S. entries which are not clearly defined and for which type N is stipulated under the classification criteria.
- Remark 15:** Reference shall be made in column (20) to remark 15 for substances that react dangerously with alkalis or acids such as sodium hydroxide or sulphuric acid.
- Remark 16:** Reference shall be made in column (20) to remark 16 for substances that may react dangerously to local overheating.
- Remark 17:** Reference shall be made in column (20) to remark 17 when reference is made to remark 6 or 7.
- Remark 18:** *No longer used.*
- Remark 19:** Reference shall be made in column (20) to remark 19 for substances that must under no circumstances come into contact with water.
- Remark 20:** Reference shall be made in column (20) to remark 20 for substances the transport temperature of which must not exceed a maximum temperature in combination with the cargo tank materials. Reference shall be made to this maximum permitted temperature immediately after the number 20.
- Remark 21:** *No longer used.*
- Remark 22:** Reference shall be made in column (20) to remark 22 for substances for which a range of values or no value of the density is indicated in column (11).
- Remark 23:** Reference shall be made in column (20) to remark 23 for substances the internal pressure of which at 30 °C is less than 50 kPa and which are transported with water spraying.
- Remark 24:** Reference shall be made in column (20) to remark 24 for transport of UN No. 3257 ELEVATED TEMPERATURE LIQUID, N.O.S.
- Remark 25:** Reference shall be made in column (20) to remark 25 for substances that must be transported while heated in a type 3 cargo tank.
- Remark 26:** Reference shall be made in column (20) to remark 26 for substances that must be transported while heated in a type 2 cargo tank.
- Remark 27:** Reference shall be made in column (20) to remark 27 for substances for which the reference N.O.S. or a generic reference is made in column (2).
- Remark 28:** Reference shall be made in column (20) to remark 28 for transport of UN No. 2448 SULPHUR, MOLTEN.

- Remark 29:** Reference shall be made in column (20) to remark 29 for substances for which the vapour pressure or boiling point is indicated in column (2).
- Remark 30:** Reference shall be made in column (20) to remark 30 for transport of UN Nos. 1719, 1794, 1814, 1819, 1824, 1829, 1830, 1832, 1833, 1906, 2240, 2308, 2583, 2584, 2677, 2679, 2681, 2796, 2797, 2837 and 3320 under the entries for which open type N is required.
- Remark 31:** Reference shall be made in column (20) to remark 31 for transport of substances of Class 2 and UN Nos. 1280 PROPYLENE OXIDE and 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE of Class 3.
- Remark 32:** Reference shall be made in column (20) to remark 32 for transport of UN No. 2448 SULPHUR, MOLTEN, of Class 4.1.
- Remark 33:** Reference shall be made in column (20) to remark 33 for transport of UN Nos. 2014 and 2984 HYDROGEN PEROXIDE, AQUEOUS SOLUTION, of Class 5.1.
- Remark 34:** Reference shall be made in column (20) to remark 34 for transport of substances for which hazard 8 is mentioned in column (5) and type N in column (6).
- Remark 35:** Reference shall be made in column (20) to remark 35 for substances for which a direct refrigeration system is not allowed.
- Remark 36:** Reference shall be made in column (20) to remark 36 for substances for which an indirect refrigeration system is not allowed.
- Remark 37:** Reference shall be made in column (20) to remark 37 for substances for which the cargo storage system must be capable of resisting the full vapour pressure of the cargo at the upper limits of the ambient design temperatures, whatever the system adopted for the boil-off gas.
- Remark 38:** Reference must be made in column (20) to remark 38 for mixtures with an initial boiling point above 60 °C in accordance with ASTM D 86-01.
- Remark 39:** Reference shall be made in column (20) to remark 39 for the carriage of UN No. 2187 CARBON DIOXIDE, REFRIGERATED LIQUID of Class 2.

3.2.4 Modalities for the application of section 1.5.2 on special authorizations concerning transport in tank vessels

3.2.4.1 Model special authorization under section 1.5.2

**Special authorization
under 1.5.2 of ADN**

Under 1.5.2 of ADN, the transport in tank vessels of the substance specified in the annex to this special authorization shall be authorized in the conditions referred to therein.

Before transporting the substance, the carrier shall be required to have it added to the list referred to in 1.16.1.2.5 of ADN by a recognized classification society.

This special authorization shall be valid
(places and/or routes of validity)

It shall be valid for two years from the date of signature, unless it is repealed at an earlier date.

Issuing State:

Competent authority:

Date:

Signature:

3.2.4.2 Application form for special authorizations under section 1.5.2

For applications for special authorizations, please answer the following questions and points.* Data are used for administrative purposes only and are treated confidentially.

Applicant

.....
(Name) (Company)

.....
()

.....
(Address)

Summary of the application

Authorization for transport in tank vessels of as a substance of Class

Annexes
(with brief description)

Application made:

At:

Date:

Signature:
(of the person responsible for the data)

1. General data on the dangerous substance

- 1.1 Is it a pure substance , a mixture , a solution ?
- 1.2 Technical name (if possible ADN nomenclature or possibly the IBC Code).
- 1.3 Synonym.
- 1.4 Trade name.
- 1.5 Structure formula and, for mixtures, composition and/or concentration.
- 1.6 Hazard class and, where applicable classification code, packing group.
- 1.7 UN No. or substance identification number (if known).

* For questions not relevant to the subject of the application, write "not applicable".

2. Physico-chemical properties

- 2.1 State during transport (e.g. gas, liquid, molten, ...).
- 2.2 Relative density of liquid at 20 ° C or at the transport temperature if the substance is to be heated or refrigerated during transport.
- 2.3 Transport temperature (for substances heated or refrigerated during transport).
- 2.4 Melting point or range ° C.
- 2.5 Boiling point or range ° C.
- 2.6 Vapour pressure at 15 ° C, 20 ° C, 30 ° C, 37.8 ° C, 50 ° C,
(for liquefied gases, vapour pressure at 70 ° C,) (for permanent gases, filling pressure at
15 ° C,).
- 2.7 Cubic expansion coefficient K⁻¹
- 2.8 Solubility in water at 20 ° C
Saturation concentration mg/l
or
Miscibility with water at 15 ° C
 Complete partial none
(If possible, in the case of solutions and mixtures, indicate concentration)
- 2.9 Colour.
- 2.10 Odour.
- 2.11 Viscosity mm²/s.
- 2.12 Flow time (ISO 2431-1996)s.
- 2.13 Solvent separation test
- 2.14 pH of the substance or aqueous solution (indicate concentration).
- 2.15 Other information.

3. Technical safety properties

- 3.1 Auto-ignition temperature in accordance with IEC 60079-4 (corresponds to DIN 51 794) ° C;
where applicable, indicate the temperature class in accordance with EN 50 014: 1994.
- 3.2 Flash-point

For flash-points up to 175 ° C

Closed-cup test methods - non-equilibrium procedure

ABEL method: EN ISO 13736:1997

ABEL-PENSKY method: DIN 51755-1:1974 and DIN 51755-2:1978 or AFNOR method: M07-019

PENSKY-MARTENS method: EN ISO 2719:2004
LUCHAIRE apparatus: French standard AFNOR T 60-103:1968

TAG method: ASTM D 56-02

Closed-cup test methods - equilibrium procedure

Rapid equilibrium procedure: EN ISO 3679:2004; ASTM D 3278-96:2004

Closed-cup equilibrium procedure: EN ISO 1523:2002; ASTM D 3941-90:2001

For flash-points above 175 ° C

In addition to the above-mentioned methods, the following open-cup test method may be applied:

CLEVELAND method: EN ISO 2592:2002; ASTM D 92-02b

3.3 Explosion limits:

Determination of upper and lower explosion limits in accordance with EN 1839:2004.

3.4 Maximum safe gap in accordance with IEC 60079-1:2003

3.5 Is the substance stabilized during transport? If so, provide data on the stabilizer:

.....

3.6 Decomposition products in the event of combustion on contact with air or under the influence of an external fire:

3.7 Is the substance fire intensifying?

3.8 Abrasion (corrosion) mm/year.

3.9 Does the substance react with water or moist air by releasing flammable or toxic gases? Yes/no.
Gases released:

3.10 Does the substance react dangerously in any other way?

3.11 Does the substance react dangerously when reheated?
Yes/no

4. **Physiological hazards**

4.1 LD₅₀ and/or LC₅₀ value. Necrosis value (where applicable, other toxicity criteria in accordance with 2.2.61.1 of ADN).

CMR properties according to Categories 1A and 1B of chapters 3.5, 3.6 and 3.7 of GHS

4.2 Does decomposition or reaction produce substances posing physiological hazards? (Indicate which substances where known)

4.3 Environmental properties (see 2.4.2.1 of ADN)

Acute toxicity:

LC₅₀ 96 hr for fish mg/l

EC₅₀ 48 hr for crustacea mg/l

E_rC₅₀ 72 hr for algae mg/l

Chronic toxicity:

NOEC mg/l

BCF mg/l or log K_{ow}

Easily biodegradable yes/no

5. Data on hazard potential

5.1 What specific damage is to be expected if the hazard characteristics produce their effect?

- Combustion
- Injury
- Corrosion
- Intoxication in the event of dermal absorption
- Intoxication in the event of absorption by inhalation
- Mechanical damage
- Destruction
- Fire
- Abrasion (corrosion to metals)
- Environmental pollution

6. Data on the transport equipment

6.1 Are particular loading requirements envisaged/necessary (what are they)?

7. Transport of dangerous substances in tanks

7.1 With which materials is the substance to be carried compatible?

8. Technical safety requirements

8.1 Taking into account the current state of science and technology, what safety measures are necessary in the light of the hazards posed by the substance or liable to arise in the course of the transport process as a whole?

8.2 Additional safety measures

Use of stationary or mobile techniques to measure flammable gases and flammable liquid vapours

Use of stationary or mobile techniques (toximeters) to measure concentrations of toxic substances

3.2.4.3 Criteria for assignment of substances

A. Columns (6), (7) and (8): Determination of the type of tank vessel

1. Gases (criteria according to 2.2.2 of ADN)

- Without refrigeration: type G pressure
- With refrigeration: type G refrigerated

2. Halogenated hydrocarbons

Substances that may only be transported in a stabilized state

Toxic substances (see 2.2.61.1 of ADN)

Flammable (flash-point < 23 °C) and corrosive substances (see 2.2.8 of ADN)

Substances with an auto-ignition temperature \leq 200 °C

Substances with a flash-point < 23 °C and an explosivity range > 15 % at 20 °C

Benzene and mixtures of non-toxic and non-corrosive substances containing more than 10% benzene

Environmentally hazardous substances, Acute or Chronic Category 1 (group N1 in accordance with 2.2.9.1.10.2)

- Cargo tank internal pressure > 50 kPa at the following temperatures: liquid 30 °C, gaseous phase 37.8 °C
 - Without refrigeration: type C pressure (400 kPa)
 - With refrigeration: type C refrigerated
- Cargo tank internal pressure \leq 50 kPa at the following temperatures: liquid 30 °C, gaseous phase 37.8 °C but with cargo tank internal pressure > 50 kPa at 50 °C
 - Without water spraying: type C pressure (400 kPa)
 - With water spraying: type C with high-velocity vent valve opening pressure of 50 kPa
- Cargo tank internal pressure \leq 50 kPa at the following temperatures: liquid 30°C, gaseous phase 37.8 °C with cargo tank internal pressure \leq 50 kPa at 50°C
 - type C with high-velocity vent valve opening pressure as calculated, but at least 10 kPa

2.1 Mixtures for which type C is required in accordance with the criteria referred to in 2 above but for which certain data are lacking

In cases where the internal pressurization of the tank cannot be calculated owing to a lack of data, the following criteria may be used

- Initial boiling point \leq 60 °C type C (400 kPa)
- 60 °C < initial boiling point \leq 85 °C type C with high-velocity vent valve opening pressure of 50 kPa and with water spraying
- 85 °C < initial boiling point \leq 115 °C type C with high-velocity vent

–	Corrosive acids:		
	● Substances assigned to packing group I or II in the list of substances and having a vapour pressure ¹ of 12.5 kPa (125 mbar) or less at 50 °C or	open type N	cargo tank walls must be distinct from vessel hull
	● Substances assigned to packing group III in the list of substances and having a vapour pressure ¹ of > 6.0 kPa (60 mbar) at 50 °C or	open type N	cargo tank walls must be distinct from vessel hull
	● Substances assigned to packing group III in the list of substances because of their degree of corrosiveness to steel or aluminium or	open type N	cargo tank walls must be distinct from vessel hull
	● Substances with a melting point greater than 0 °C and transported at elevated temperatures	open type N	cargo tank walls must be distinct from vessel hull
	● Flammable substances	open type N	with flame-arresters
	● Elevated temperature substances	open type N	with flame-arresters
	● Non-flammable substances	open type N	without flame-arresters
–	All other corrosive substances:		
	● Flammable substance	open type N	with flame-arresters
	● Non-flammable substances	open type N	without flame-arresters
5.	Environmentally hazardous substances (see 2.2.9.1 of ADN)		
	● Chronic 2 and 3 (group N2 in accordance with 2.2.9.1.10.2)	open type N	cargo tank walls must be distinct from vessel hull
	● Acute 2 and 3 (group N3 in accordance with 2.2.9.1.10.2)	open type N	_____
6.	Substances of Class 9, UN No. 3257	open type N	independent cargo tanks
7.	Substances of Class 9, Identification No. 9003	open type N _____	
	Flash-point > 60 °C and ≤ 100 °C:	open type N _____	

¹ *If the data are available, the sum of the partial pressures of the dangerous substances may be used in place of the vapour pressure.*

8. Substances that must be transported at elevated temperatures

For substances that must be transported at elevated temperatures, the type of cargo tank shall be determined on the basis of the transport temperature, using the following table:

Maximum transport temperature T in °C	Type N	Type C
$T \leq 80$	2	2
$80 < T \leq 115$	1 + remark 25	1 + remark 26
$T > 115$	1	1

1 = cargo tank type: independent tank

2 = cargo tank type: integral tank

Remark 25 = remark No. 25 in column (20) of the list of substances contained in Chapter 3.2, Table C.

Remark 26 = remark No. 26 in column (20) of the list of substances contained in Chapter 3.2, Table C.

9. Substances with long-term effects on health - CMR substances (Categories 1A and 1B in accordance with the criteria of chapters 3.5, 3.6 and 3.7 of GHS²), provided that they are already assigned to Classes 2 to 9 by virtue of other criteria

C carcinogenic

M mutagenic

R toxic to reproduction

closed type N

cargo tank walls must be distinct from vessel hull; high-velocity vent valve opening pressure of at least 10 kPa, with water-spray system, if the internal pressurization of the tank is more than 10 kPa (calculation of the vapour pressure according to the formula for column 10, except that $v_a = 0.03$)

10. Substances that float on the water surface ('floaters') or sink to the bottom of the water ('sinkers') (criteria in accordance with GESAMP),³ provided that they are already assigned to Classes 3 to 9 and that type N is required on that basis

open Type N

cargo tank walls must be distinct from vessel hull

B. Column (9): Determination of state of cargo tank

(1) Refrigeration system

Determined in accordance with A.

² Since there is no official international list of CMR substances of Categories 1A and 1B, pending the availability of such a list, the list of CMR substances of Categories 1 and 2 in Directives 67/548/EEC and 88/379/EEC of the Council of the European Union, as amended, shall apply.

³ IMO publication: "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", GESAMP Reports and Studies No. 64, IMO, London, 2002.

(2) Possibility of heating the cargo

A possibility of heating the cargo shall be required:

- When the melting point of the substance to be transported is + 15 °C or greater, or
- When the melting point of the substance to be transported is greater than 0 °C but less than + 15 °C and the outside temperature is no more than 4 K above the melting point. In column (20), reference shall be made to remark 6 with the temperature derived as follows: melting point + 4 K.

(3) Water-spray system

Determined in accordance with A.

(4) Cargo heating system on board

- For substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating, and
- For substances that must be maintained at a guaranteed temperature of not less than 15 K below their flash-point.

C. Column (10): Determination of opening pressure of high-velocity vent valve in kPa

For vessels of type C, the opening pressure of the high-velocity vent valve shall be determined on the basis of the internal pressure of the tanks, rounded up to the nearest 5 kPa.

To calculate the internal pressure, the following formula shall be used:

$$P_{\max} = P_{Ob\max} + \frac{k \cdot v_a (P_0 - P_{Da})}{v_a - \alpha \cdot \delta_t + \alpha \cdot \delta_t \cdot v_a} - P_0$$
$$k = \frac{T_{D\max}}{T_a}$$

In this formula:

P_{\max} : Maximum internal pressure in kPa

$P_{Ob\max}$: Absolute vapour pressure at maximum liquid surface temperature in kPa

P_{Da} : Absolute vapour pressure at filling temperature in kPa

P_0 : Atmospheric pressure in kPa

v_a : Free relative volume at filling temperature compared with cargo tank volume

α : Cubic expansion coefficient in K^{-1}

δ_t : Average temperature increase of the liquid due to heating in K

$T_{D\max}$: Maximum gaseous phase temperature in K

T_a : Filling temperature in K

k : Temperature correction factor

t_{Ob} : Maximum liquid surface temperature in °C

In the formula, the following basic data are used:

P_{Obmax} : At 50 °C and 30 °C

P_{Da} : At 15 °C

P_0 : 101.3 kPa

v_a : 5% = 0.05

δ_t : 5 K

T_{Dmax} : 323 K and 310.8 K

T_a : 288 K

t_{Ob} : 50 °C and 30 °C

D. Column (11): Determination of maximum degree of filling of cargo tanks

If, in accordance with the provisions under A above:

- Type G is required: 91% however, in the case of deeply refrigerated substances: 95%
- Type C is required: 95%
- Type N is required: 97% however, in the case of substances in a molten state and of flammable liquids with $175 \text{ kPa} \leq P_{v50} < 300 \text{ kPa}$: 95%.

E. Column (13): Determination of type of sampling device

- 1 = *closed*:
 - Substances to be transported in pressure cargo tanks
 - Substances with T in column (3b) and assigned to packing group I
 - Stabilized substances to be transported under inert gas.
- 2 = *partly closed*:
 - All other substances for which type C is required
- 3 = *open*:
 - All other substances

(F) Column (14): Determination of whether a pump-room is permitted below deck

- No
 - All substances with letter T in the classification code indicated in column (3b) with the exception of substances of Class 2.
- Yes
 - All other substances

(G) Column (15): Determination of temperature class

Flammable substances shall be assigned to a temperature class on the basis of their auto-ignition point:

Temperature class	Auto-ignition temperature T of flammable liquids and gases in °C
T1	$T > 450$
T2	$300 < T \leq 450$
T3	$200 < T \leq 300$
T4	$135 < T \leq 200$
T5	$100 < T \leq 135$
T6	$85 < T \leq 100$

When anti-explosion protection is required and the auto-ignition temperature is not known, reference shall be made to temperature class T4, considered safe.

(H) Column (16): Determination of explosion group

Flammable substances shall be assigned to an explosion group on the basis of their maximum experimental safe gaps. The maximum experimental safe gaps shall be determined in accordance with standard IEC 60079-1-1.

The different explosion groups are as follows:

Explosion group	Maximum experimental safe gap in mm
II A	> 0,9
II B	≥ 0.5 to ≤ 0.9
II C	< 0.5

When anti-explosion protection is required and the relevant data are not provided, reference shall be made to explosion group II B, considered safe.

(I) Column (17): Determination of whether anti-explosion protection is required for electrical equipment and systems

- | | |
|-----|--|
| Yes | - Substances with a flash-point ≤ 60 °C.
- Substances that must be transported while heated to a temperature less than 15 K from their flash-point. |
| No | - Flammable gases
- All other substances |

(J) Column (18): Determination of whether personal protective equipment, escape devices, portable flammable gas detectors, portable toximeters or ambient-air-dependent breathing apparatus is required

- PP: For all substances of Classes 1 to 9;
- EP: For all substances
 - of Class 2 with letter T or letter C in the classification code indicate in column (3b);
 - of Class 3 with letter T or letter C in the classification code indicated in column (3b);
 - of Class 4.1;
 - of Class 6.1;
 - of Class 8; and
 for CMR substances of Category 1A or 1B according to chapters 3.5, 3.6 and 3.7 of GHS;
- EX: For all substances for which anti-explosion protection is required;
- TOX: For all substances of Class 6.1;
For all substances of other classes with T in column (3b);
For CMR substances of Category 1A or 1B according to chapters 3.5, 3.6 and 3.7 of GHS;
- A: For all substances for which EX or TOX is required.

(K) Column (19): Determination of the number of cones or blue lights

For all substances of Class 2 with letter F in the classification code indicated in column (3b): 1 cone/light

For all substances of Classes 3 to 9 with letter F in the classification code indicated in column (3b) and assigned to packing group I or II:	1 cone/light
For all substances of Class 2 with letter T in the classification code indicated in column (3b):	2 cones/lights
For all substances of Classes 3 to 9 with letter T in the classification code indicated in column (3b) and assigned to packing group I or II:	2 cones/lights

(L) Column (20): Determination of additional requirements and remarks

- Remark 1:** Reference shall be made in column (20) to remark 1 for transport of UN No. 1005 AMMONIA, ANHYDROUS.
- Remark 2:** Reference shall be made in column (20) to remark 2 for stabilized substances that react with oxygen.
- Remark 3:** Reference shall be made in column (20) to remark 3 for substances that must be stabilized.
- Remark 4:** Reference shall be made in column (20) to remark 4 for substances that must not be allowed to solidify owing to the possibility of dangerous reactions on reheating.
- Remark 5:** Reference shall be made in column (20) to remark 5 for substances liable to polymerization.
- Remark 6:** Reference shall be made in column (20) to remark 6 for substances liable to crystallization and for substances for which a heating system or possibility of heating is required and the vapour pressure of which at 20 °C is greater than 0.1 kPa.
- Remark 7:** Reference shall be made in column (20) to remark 7 for substances with a melting point of + 15 °C or greater.
- Remark 8:** Reference shall be made in column (20) to remark 8 for substances that react dangerously with water.
- Remark 9:** Reference shall be made in column (20) to remark 9 for transport of UN No. 1131 CARBON DISULPHIDE.
- Remark 10:** *No longer used.*
- Remark 11:** Reference shall be made in column (20) to remark 11 for transport of UN No. 1040 ETHYLENE OXIDE WITH NITROGEN.
- Remark 12:** Reference shall be made in column (20) to remark 12 for transport of UN No. 1280 PROPYLENE OXIDE and UN No. 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE.
- Remark 13:** Reference shall be made in column (20) to remark 13 for transport of UN No. 1086 VINYL CHLORIDE, STABILIZED.
- Remark 14:** Reference shall be made in column (20) to remark 14 for mixtures or N.O.S. entries which are not clearly defined and for which type N is stipulated under the classification criteria.
- Remark 15:** Reference shall be made in column (20) to remark 15 for substances that react dangerously with alkalis or acids such as sodium hydroxide or sulphuric acid.
- Remark 16:** Reference shall be made in column (20) to remark 16 for substances that may react dangerously to local overheating.

- Remark 17:** Reference shall be made in column (20) to remark 17 when reference is made to remark 6 or 7.
- Remark 18:** *No longer used.*
- Remark 19:** Reference shall be made in column (20) to remark 19 for substances that must under no circumstances come into contact with water.
- Remark 20:** Reference shall be made in column (20) to remark 20 for substances the transport temperature of which must not exceed a maximum temperature in combination with the cargo tank materials. Reference shall be made to this maximum permitted temperature immediately after the number 20.
- Remark 21:** *No longer used.*
- Remark 22:** Reference shall be made in column (20) to remark 22 for substances for which a range of values or no value of the density is indicated in column (11).
- Remark 23:** Reference shall be made in column (20) to remark 23 for substances the internal pressure of which at 30 °C is less than 50 kPa and which are transported with water spraying.
- Remark 24:** Reference shall be made in column (20) to remark 24 for transport of UN No. 3257 ELEVATED TEMPERATURE LIQUID, N.O.S.
- Remark 25:** Reference shall be made in column (20) to remark 25 for substances that must be transported while heated in a type 3 cargo tank.
- Remark 26:** Reference shall be made in column (20) to remark 26 for substances that must be transported while heated in a type 2 cargo tank.
- Remark 27:** Reference shall be made in column (20) to remark 27 for substances for which the reference N.O.S. or a generic reference is made in column (2).
- Remark 28:** Reference shall be made in column (20) to remark 28 for transport of UN No. 2448 SULPHUR, MOLTEN.
- Remark 29:** Reference shall be made in column (20) to remark 29 for substances for which the vapour pressure or boiling point is indicated in column (2).
- Remark 30:** Reference shall be made in column (20) to remark 30 for transport of UN Nos. 1719, 1794, 1814, 1819, 1824, 1829, 1830, 1832, 1833, 1906, 2240, 2308, 2583, 2584, 2677, 2679, 2681, 2796, 2797, 2837 and 3320 under the entries for which open type N is required.
- Remark 31:** Reference shall be made in column (20) to remark 31 for transport of substances of Class 2 and UN Nos. 1280 PROPYLENE OXIDE and 2983 ETHYLENE OXIDE AND PROPYLENE OXIDE MIXTURE of Class 3.
- Remark 32:** Reference shall be made in column (20) to remark 32 for transport of UN No. 2448 SULPHUR, MOLTEN, of Class 4.1.
- Remark 33:** Reference shall be made in column (20) to remark 33 for transport of UN Nos. 2014 and 2984 HYDROGEN PEROXIDE, AQUEOUS SOLUTION, of Class 5.1.
- Remark 34:** Reference shall be made in column (20) to remark 34 for transport of substances for which hazard 8 is mentioned in column (5) and type N in column (6).
- Remark 35:** Reference shall be made in column (20) to remark 35 for substances for which a direct refrigeration system is not allowed.

- Remark 36:** Reference shall be made in column (20) to remark 36 for substances for which an indirect refrigeration system is not allowed.
- Remark 37:** Reference shall be made in column (20) to remark 37 for substances for which the cargo storage system must be capable of resisting the full vapour pressure of the cargo at the upper limits of the ambient design temperatures, whatever the system adopted for the boil-off gas.
- Remark 38:** Reference must be made in column (20) to remark 38 for mixtures with an initial boiling point above 60 °C in accordance with ASTM D 86-01.
- Remark 39:** Reference shall be made in column (20) to remark 39 for the carriage of UN No. 2187 CARBON DIOXIDE, REFRIGERATED LIQUID of Class 2.



CERTIDÃO

Brasília, 27 de outubro de 2017.

CERTIDÃO DE JULGAMENTO EM SEGUNDA INSTÂNCIA ADMINISTRATIVA

472ª SESSÃO DE JULGAMENTO DA ASJIN

Processo: 60800.203068/2011-16

Interessado: EMPRESA BRASILEIRA DE CORREIOS E TELEGRAFOS

Crédito de Multa (nº SIGEC): 645.938/15-2

AINI: 4943/2011

Membros Julgadores ASJIN:

- Bruno Kruchak Barros - SIAPE 1629380- Portaria nº 2026/2016 - Presidente da Sessão Recursal
- Eduardo Viana Barbosa – SIAPE 1624783 (Portaria Nomeação Membro Julgador ANAC nº 1381, DIRP/2016) - **Relator**
- Isaias de Brito Neto - SIAPE 1291577 (Portaria ANAC nº 644/DIRP/2016.) - Membro Julgador

Certifico que a Assessoria de Julgamento de Autos em Segunda Instância – ASJIN da Agência Nacional de Aviação Civil – ANAC, ao apreciar o processo em epígrafe na sessão realizada nesta data, proferiu a seguinte decisão em segunda instância administrativa:

A ASJIN, *por unanimidade*, **NEGOU PROVIMENTO** ao recurso, **MANTENDO** a multa aplicada pela decisão de primeira instância administrativa em R\$ 14.000,00 (quatorze mil reais), nos termos do voto do Relator.

Encaminhe-se à Secretaria da ASJIN para as providências de praxe.



Documento assinado eletronicamente por **Eduardo Viana Barbosa, Analista Administrativo**, em 11/01/2018, às 14:45, conforme horário oficial de Brasília, com fundamento no art. 6º, § 1º, do [Decreto nº 8.539, de 8 de outubro de 2015](#).



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