SPECIAL AUTHORIZATIONS, DEROGATIONS AND EQUIVALENTS

Special authorization requested by Shell and proposed entry for Table C

Submitted by the Government of the Netherlands

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It shall be valid for two years from the date of signature, unless it is repealed at an earlier date.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

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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
SHELL CHEMICALS EUROPE B.V.
P.O. Box 8610
3067GJ Rotterdam
The Netherlands

Summary of the application
Authorization for transport in tank vessels of IP Extraction Feed as a substance of Class 3

**Annexes**
(with brief description)

**Application made:**
At: S.C.E., Rotterdam
Date: 06-08-2009
Signature: J.van Berkel

1. **General data on the dangerous substance**
   1.1 Is it a pure substance ☐, a mixture X, a solution ☐?
   1.2 Technical name Isoprene extraction Feed
   1.3 Synonym: Crude C5 stream, Raw C5, Crude C5, Isoprene Concentrate, Crude Isoprene, Hydrocarbons C5-rich-
   1.4 Trade name: Isoprene Extraction feed
   * For questions not relevant to the subject of the application, write “not applicable”.
   ECE/TRANS/WP.15/AC.2/26

   1.5 Structure formula and, for mixtures, composition and/or concentration.
   - Isoprene 10 – 25%
   - Dicyclopentadiene 2 - 5%
   - Cyclopentadiene 5 - 12%
   - Pentanes (N+Iso) 25 - 35%
   - 1,3 Pentadiene 10 - 20%
   - Other Hydrocarbons 48 - 3%

   1.6 Hazard class and, where applicable classification code, packing group.
   - Class 3, PG I, classification code F1,
   - UN No. 3295

2. **Physico-chemical properties**
   2.1 State during transport: liquid
   2.2 Density of liquid at 20 ºC 678 kg/M3
   2.3 Transport temperature <25 degr. C
   2.4 Melting point or range not applicable.
   2.5 Boiling point or range 34 - 60 ºC.
   2.6 Vapour pressure at 15 ºC –53.30 kPa, 30 ºC –16.62 kPa, 40º C 18.06 kPa 50 ºC 62.95 kPa

   2.7 Cubic expansion coefficient 0,001546 K⁻¹
   2.8 Solubility in water at 20 ºC
   - Saturation concentration 0,05 mg/l (negligible)
   or
   - Miscibility with water at 15 ºC
   ☐ Complete X partial ☐ none

   2.9 Colour. Waterwhite to very slightly coloured
   2.10 Odour. Unpleasant
   2.11 Viscosity <1 mm²/s.
   2.13 Solvent separation test not applicable.
   2.14 pH of the substance or aqueous solution. 7
   2.15 Other information. none
3. Technical safety properties

3.1 Auto-ignition temperature in accordance with IEC 60079-4 (corresponds to DIN 51 794) 350 º C; where applicable, indicate the temperature class in accordance with EN 50 014: not applicable.

3.2 Flash-point <-20 degr. C (estimated value)
   For flash-points up to 175 º C
   Closed-cup test methods - non-equilibrium procedure
   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
   For flash-points above 175 º 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 between 1 and 12

3.5 Is the substance stabilized during transport? If so, provide data on the stabilizer:
   Yes, Topanol A087 (specification in product 75 – 150 ppm)

3.6 Decomposition products in the event of combustion on contact with air or under the influence of an external fire: not applicable
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3.7 Is the substance fire intensifying? Yes

3.8 Abrasion (corrosion) not applicable mm/year.

3.9 Does the substance react with water or moist air by releasing flammable or toxic gases? No
   Gases released: none

3.10 Does the substance react dangerously in any other way? No

3.11 Does the substance react dangerously when reheated? 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
   LD50: >2000 mg/kg Rabbit           LC50: >20 mg/l /4 hours Rat

4.2 Does decomposition or reaction produce substances posing physiological hazards? (Indicate which substances where known) No

4.3 Environmental properties (see 2.4.2.1 of ADN)
   Acute toxicity:
   LC50 96 hr for fish 1 <= 10 mg/l
   EC50 48 hr for crustacea 1 <= 10 mg/l
   ErC50 72 hr for algae 1 <= 10 mg/l
   Chronic toxicity:
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)?

   Yes. Tankbarge type C 50 kPa,

7. **Transport of dangerous substances in tanks**

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

   Stainless steel, Zinc coating, Epoxy coating.

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?

   - Prepurge barge tanks with inert gas (Nitrogen) to <0.5% O2, maintain O2 level; Max product temperature during transport 25 degr. C.

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
Proposed entry for Table C

Annex

<table>
<thead>
<tr>
<th>UN No. or substance Identification No.</th>
<th>Name and description</th>
<th>Class</th>
<th>Classification code</th>
<th>Packing group</th>
<th>Cargo tank design</th>
<th>Cargo tank type</th>
<th>Cargo tank equipment</th>
<th>Opening pressure of the high velocity vent valve in kPa</th>
<th>Maximum degree of filling in %</th>
<th>Relative density at 20 ºC</th>
<th>Type of sampling device</th>
<th>Pump room below deck</th>
<th>Temperature Class</th>
<th>Explosion groupe</th>
<th>Ant-explosion protection required</th>
<th>Equipment required</th>
<th>Number of cone/blue lights</th>
<th>Additional requirements/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3295 HYDROCARBONS, LIQUID, N.O.S. CONTAINS ISOPRENE AND PENTADIENE (up at 50 ºC higher than 110 kPa), stabilized</td>
<td>3, unst. (N2, CMR)</td>
<td>C</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>50</td>
<td>95</td>
<td>0.678 gr/ml</td>
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<td>YES</td>
<td>T4</td>
<td>II B</td>
<td>yes</td>
<td>PP, EX, A</td>
<td>1</td>
<td>3.27, 29</td>
<td></td>
<td></td>
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</table>