MEMO

Summary:

To be able to transport most products under UN 1268 “PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.” and under UN 3295 “HYDROCARBONS, LIQUID, N.O.S.” , according to the provisions of the ADN, information to ensure the proper sub-explosion group data is necessary via “foot note #44”. This information is often missing, which leads to a situation the product is not allowed to be transported and so, a compliance gap.

If these data are missing, the formal parties involved: consignors (shippers/traders), fillers (loading facilities) and carriers should not commence the transport as it cannot be confirmed the barge is allowed to carry the product.

The inland navigation industry is asking her stakeholders to put attention to this missing information and provide it, to ensure that transports of these products are being performed in line with legislation; thus according to the provisions of the ADN.

As this solution needs a trip by trip data supply, in the end a more general solution could be to let these positions been adapted in the ADN, 3.2, Table C. A substantiated proposal with supporting data to the ADN Safety Committee would be necessary, therefor.

ADN 3.2 Table C, remark -44- for UN 1268 / UN 3295

The problem

Currently, the barging industry is facing compliance problems daily, regarding the transport of (mainly) UN 1268 and UN 3295. This problem seems to be primarily an administrational/informational lack of necessary data (as it is known that the majority oil-products/mixes are classified in the lowest explosion group “IIA”). It leads to a non-compliant transport when the necessary explosion sub-group information is missing.

Scope

Most Nafta’s, Alkylates, Isomerates, Reformates and other intermediates/mixtures are classified according to the Chapter 2 (“Classification”) of the ADN, under UN numbers 1268 “Petroleum distillates, N.O.S.” and UN 3295 “Hydrocarbons, liquid, N.O.S.”. These UN numbers are used for “not otherwise specified” oil products (“N.O.S.”), which makes them collective positions, used for many product streams.

As these products are not that clearly specified, and consist of mixes with varying composition, a lot of information needed for transport, such as additional hazards (CMR, floater/sinker, aqua toxicity properties) and packing groups (I, II or III) need to be shared consistently, as these will be different and/or can deviate from trip to trip. This is different to f.e. chemicals with fixed properties and specific own entries in ADN 3.2., Table C.

Therefore, most positions of these UN numbers 1268 and 3295 do have special provisions, which requires the consigner to provide additional information in order to assure the product is allowed to be transported with the intended barge.

Below, a snapshot of ADN 3.2, Table C, the 'list of products for tank barges':

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 B4) (II B3)	yes	*	1	14, 27, 44 *see 3.2.3.3
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 B4)	yes	*	0	14, 27 *see 3.2.3.3

4) The maximum experimental safe gap (MESG) has not been measured in accordance with a standardized determination procedure; therefore, assignment has been made to explosion group II B which is considered safe.

For UN 1268 and UN 3295, the most common remark in column 20 (special provisions) is remark "44".

44. A substance shall only be assigned to this entry where there is measurement data or verified information in accordance with IEC 60079-20-1 or equivalent that allows for an assignment to subgroups II B3, II B2 or II B1 of explosion group II B or explosion group II A.

Participants involved

When dangerous goods are (offered for) transport, under the provisions of the ADN, all participants involved in the transport have to fulfill their safety obligations, as listed in ADN 1.4. ("Safety obligations of the participants"):

- The consignor (ADN 1.4.2.1.1) shall:
  a) Ascertain that the dangerous goods are classified and authorized for carriage in accordance with ADN;
- The filler (ADN 1.4.3.3. b):
  m) shall complete his section of the checklist referred to in 7.2.4.10 prior to the loading of the cargo tanks of a tank vessel;
- The carrier (ADN 1.4.2.2.1) shall:
  a) Ascertain that the dangerous goods are classified and authorized for carriage in accordance with ADN
  b) Ascertain that all information prescribed in ADN related to the dangerous goods to be carried has been provided by the consignor before carriage (…)

The barge

Barges are equipped with flame arrestors and over-and under pressure safety valves in their vapor return line systems, the so called "autonomous protection systems" (ref. ADN 1.2 – definitions) , as part of explosion protection. The level of protection "Explosion Group" is related to the substances as listed in ADN 3.2, Table C. Derived from Table C , for each individual barge individual "Substance list" is provided by the Class Society.

A barge is only allowed to carry substances, which are listed on this official Substance list.

Explosion groups and sub-groups ADN

The explosions groups (until ADN-2019):

- IIA
- IIB
- IIC

Since the revision of the ADN 2019, explosion group “IIB” is divided in four additional types (IIB, IIB3, IIB2 and IIB1):

Explosion group	Maximum experimental safe gap (MESG) of gas/air-mixture mm
IIA1[a]	≥ 1,14
IIA	> 0,90
IIB1	≥ 0,85
IIB2	≥ 0,75
IIB3	≥ 0,65
IIB	≥ 0,50
IIC	< 0,50
[a] IIA1 does not include natural gas and is not applicable for detonation arresters.	

Based on this, a lot of products are now no longer, or no longer naturally permitted to be transported as the required explosion (sub-) group does not correspond with the explosion (sub-) group on board. The vast majority of ships is equipped with IIB3 flame arrestors. This is being investigated by the national industry association EBU/ESO.

Products

In general, for a lot of products it is known whether explosion protection of group IIA, IIB of IIC is required, but the sub divisions of IIB are often not determined as these sub divisions are only used on the barges side according to the scope of the ADN.

In ADN 3.2, Table C, for pure chemicals, a specific explosion (sub)group is indicated in column 16. F.e. “UN 1114, Benzene”, explosion group IIA (MESG > 0,90 mm) is required, minimally. For unknown compositions, the Table C indicates a ‘worst case scenario’ which is IIB (MESG 0,5-0,65 mm).

When shippers classify their products according to chapter two of the ADN legislation, they have to determine which of the UN numbers is applicable. For mixtures, such as a lot products, classified under UN 1268 and UN 3295, via footnote 44 in column 20 of ADN 3.2 Table C, it must be confirmed whether IIB is required or IIB3. In case the confirmation IIB3-information is missing, they are automatically assigned to the “safest” position: IIB.

This position shows an additional Special Provision: Note 44. This note indicates that only IIB flame arrestors are allowed, unless data or verified information are available which indicates that IIA,IIB1, IIB2 or IIB3 is sufficient.

Required information

The vast majority of barges only have the products on their by Class provided Substance list with IIB3 as a requirement, products for which IIB are required are not on the substance list. The foot note 44 in Table C of the ADN is taken over to the Substance list which indicates extra information is required.

As the extra required information of the explosion sub-group is not necessarily available in nominations and provided in Safety Datasheets, the carrier is not able to fully prove whether it is allowed to load the nominated cargo.

This decision moment is also the first question to be answered by the filling terminal and barge to complete the ADN-checklist.

Snap shot of a barges Substance list, indicating foot note 44:

1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S (Flash point < 23°C with vP50<110 kPa)	3	F1	I	3, N1, N2, N3, CMR, F	97.0	PP, EP, EX, TOX, A	14, 22, 44, 302
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S (Flash point < 23°C with vP50<110 kPa)	3	F1	II	3, N1, N2, N3, CMR, F	97.0	PP, EP, EX, TOX, A	14, 22, 44, 302
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S (Flash point >= 23°C but <= 60 °C)	3	F1	III	3, N1, N2, N3, CMR, F	97.0	PP, EP, EX, TOX, A	14, 22, 44, 302

Snap shot of the model of the ADN Checklist 8.6.3:

		vessel	3 loading/ unloading place
1.	Is the vessel permitted to carry this cargo?	O*	O*

To answer this question and provide prove of evidence during inspections by authorities, the barge needs to have the confirmation on board that the flame arrestors on board are sufficient to transport the product.

It is known, based on the composition of most nafta`s, that IIB3, or even IIA could be sufficient, but nevertheless this confirmation provided by our customer/consignor/filler, based on ADN legislation is needed.

Conclusion

The vast majority of inland tank barges are equipped with IIB3 flame arrestors, while for the most transported cargoes, classified under UN 1268 or UN 3295, IIB flame arrestors are required.

In order be able to transport these cargos, it is necessary to provide the barge/barge operator with the confirmation that, based on information (calculations etc.), IIB3 is sufficient for the intended cargo to be transported. Only by doing so, the requirements of the ADN legislation, related to note 44 can be fulfilled.

On board, before signing off the ADN-Checklist, it would be sufficient for the filler to provide a written confirmation that flame arrestors of type IIB3 are sufficient. Further detailed evidence for this is not necessary for the transport, probably shall be available for the competent authority inspections.

A written confirmation to the barge operator that no products are carried with a higher required protection level of IIB3 would be sufficient all your transports for the same product stream.