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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Refrigerated hydrocarbon liquids -- Static measurement --
Calculation procedure**

冷冻烃类流体 静态测量 计算方法

(English Translation)

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Foreword

This revised standard adopts ISO 6578:1991 "Frozen hydrocarbon fluid static measurement and calculation methods." this standard is based on ISO 6578:1991 re-drafted.

This standard and ISO 6578:1991 is the main technical difference with Chapter 2 normative references in the national standard replaces ISO standard.

This standard and ISO 6578:1991 main editorial differences are as follows.

--- "This International Standard" be replaced by "this standard";

--- Delete ISO 6578:1991 foreword, preface rewritten this standard;

- Modify the ISO 6578:1991 Introduction;
- Chapter 5 to Chapter 9, according to GB/T 1.1-2000 requirements of formula uniform numbers;
- Delete ISO 6578:1991 Annex F;
- Increase the "References", according to GB/T 1.1 requirements of the ISO 6578:1991 Appendix reference exchange rate and uniform number.

This standard Appendices A to G are normative appendices.

This standard by the National Standardization Technical Committee on Gas (SAC/TC244) proposed.

This standard by the National Standardization Technical Committee on Gas (SAC/TC244) centralized.

Introduction

Currently, a large Refrigerated light hydrocarbon fluids (such as LNG and LPG) storage and transportation are very common. Because these products in the cold condition, So existing standard measurement of petroleum products do not apply, and in some cases can not even be used. These items should be provided in accordance with this standard Program to replace or modify the existing criteria.

Accurate measurement of sales Refrigerated light hydrocarbon fluids, procurement and processing are the most important. Custody transfer protocol requires static measurement process Order standardized and recommended the transfer of the amount to the quality or energy representation. Currently, the use of other units liquefied petroleum gas (LPG), although the transfer shall bear Recognition, but it is not included in this standard.

Although the calculation of the amount of static Refrigerated light hydrocarbon fluids at ambient temperature for computing the amount of petroleum products, the principles are similar, but because Refrigerated light hydrocarbon Low temperature and physical properties lead to some differences. These differences are as follows.

a) liquid products at or near its bubble point temperature. Refrigerated light hydrocarbon fluids storage tanks will always produce very little heat through the insulating layer Pass, which led to continuous product evaporation. Volatile component in the vapor phase concentration is higher than the concentration in the liquid phase. In order to avoid over Pressure steam is discharged from the tank, and then compressed, cooled and re-liquefaction and reinjection into the tank.

b) When the liquid product from a tank into another tank, generate additional heat to the pipeline and pump, causing the Produce more evaporation receiving tank.

c) for from a supply tank to the receiving tank custody transfer, typically a vapor return line and the tank connection, in order to avoid vapor feed into the atmosphere. Re-liquefaction system to avoid the connection pressure.

D) After partially filled, the tank liquid component may appear stratified by different temperatures and densities. Therefore, you may need to set up a plurality of temperature measuring point and a special sampling system. If the filling operation to ensure thorough mixing, you can reduce these settings.

e) I have a lot of evidence that there is a big temperature gradient Refrigerated light hydrocarbon vapor space of the tank; and the latter is not linear. If liquid Reading level measurement devices affect different level sensor by pulling cable contraction, it must be suitably compensated (physical or by calculation).

f) Refrigerated light hydrocarbon fluid volume expansion of large temperature coefficient, with a value as follows.

--- Propane, 0.20%/°C

--- Methane, 0.35%/°C it must be emphasized that the temperature measurement error is the main part of the magnitude of the measurement error, and therefore should pay more attention to the choice of the temperature measuring device and use.

This standard applies to the measurement of land and ship frozen liquid tank is completely frozen at its vapor pressure near atmospheric pressure when. Do not push Recommended for small package frozen liquid, which can be directly weighed.

Calculation does not include the light hydrocarbon liquid or frozen ethane and ethylene pressure mainly by the composition of the light hydrocarbon liquid is higher than the partial freezing atmospheres.

Upon obtaining more reliable data, it will be provided in future versions.

Measurement procedures mandate holders must have a wealth of experience and skills.

Frozen hydrocarbon fluids Static measurement calculation method

1 Scope

1.1

standard specifies the volume of frozen light hydrocarbon fluids such as LNG (liquefied natural gas) and LPG (liquefied petroleum gas), the measurement conditions in terms of standard reference volume ratio of liquid or vapor temperature and pressure conditions equivalent, or the equivalent in terms of mass or energy (heat) calculation Party law. This standard applies to static storage conditions gauge measuring Refrigerated light hydrocarbon liquid stored in the tank, or transferred from the storage tank, or transfer when entering the tank gauging.

1.2

application of these procedures, the final value is expressed as follows.

- a) quality (see Note);
- b) energy (heat);
- c) an equivalent volume of vapor in standard conditions.

Note: The current measurements in practice is to observe the quality of LPG in air.

Table 1 gives the conversion factor can be converted into mass observed in air quality.

Table 1 conversion factor of quality and air quality observation

Density (15 °C)/(kg/m ³)	Conversion factor
500.0 - 519.1	519.2 - 542.1
542.2 - 567.3	567.4 - 595.0
595.1 - 625.5	625.6 - 659.3
0.99775	0.99785
0.99795	0.99805
0.99815	0.99825

1.3

If you need a standard reference temperature of the liquid volume indicated in Chapter 4 shows the magnitude and correlation calculation program. Oil production Standard reference temperature of 15 °C (see ISO 5024), but is also used in other areas other than a standard reference temperature, such as 20 °C.

If the value calculation involves product density or heat, or can be directly measured by the product composition analysis data calculated 1.4. Article 8 and Chapter 9 gives these programs supporting calculations.

1.5

Appendix A to F shows the normative basis of data and information used in the calculation procedure.

2 Normative references

The following documents contain provisions which, through the standard reference and become the standard terms. For dated references, subsequently Some amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Study whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 1885-1998 Petroleum Measurement Tables (eqv ISO 91-2:1991) GB/T 11062-1998 natural gas calorific value, density, relative density and Wobbe index calculation method (neq ISO 6976:1995)