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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 911

SULPHURIC ACID FOR INDUSTRIAL USE

EVALUATION OF SULPHURIC ACID CONCENTRATION BY MEASUREMENT OF DENSITY

1st EDITION
December 1968

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

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BRIEF HISTORY

The ISO Recommendation R 911, *Sulphuric acid for industrial use – Evaluation of sulphuric acid concentration by measurement of density*, was drawn up by Technical Committee ISO/TC 47, *Chemistry*, the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Based on detailed work on this question carried out by the Technical Committee, a Draft ISO Recommendation was adopted in 1965.

In June 1967, this Draft ISO Recommendation (No. 1181) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Ireland	Switzerland
Chile	Italy	Thailand
Cuba	Japan	Turkey
Czechoslovakia	Netherlands	U.A.R.
France	New Zealand	U.S.S.R.
Germany	Poland	Yugoslavia
Hungary	Portugal	
ICAITI*	Romania	

One Member Body opposed the approval of the Draft :

United Kingdom

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in December 1968, to accept it as an ISO RECOMMENDATION.

* Instituto Centroamericano de Investigación y Tecnologia Industrial (Costa Rica, Guatemala, Honduras, Nicaragua, El Salvador, Panama).

ISO Recommendation R 911 December 1968

SULPHURIC ACID FOR INDUSTRIAL USE

EVALUATION OF SULPHURIC ACID CONCENTRATION BY MEASUREMENT OF DENSITY

1. SCOPE

This ISO Recommendation describes a method for the evaluation of H_2SO_4 concentration of sulphuric acid for industrial use, by measurement of density.

2. PRINCIPLE

Determination of the density at 20 °C by means of a hydrometer. Evaluation of the corresponding H_2SO_4 concentration.

3. APPARATUS

Ordinary laboratory apparatus and

3.1 *Hydrometer*, calibrated at 20 °C, graduated in 0.005 g/ml.

4. PROCEDURE

4.1 Determination of density

Place approximately 500 ml of the test sample in a glass cylinder. Adjust the temperature of the sample to 20 ± 0.5 °C. Plunge in the hydrometer (3.1) and carry out the reading as soon as static and thermal equilibrium have been reached.

4.2 Evaluation of H_2SO_4 concentration

From the determined density (4.1) read from the attached Table the corresponding H_2SO_4 concentration as a percentage by mass.

5. EXPRESSION OF RESULTS

State the density read on the hydrometer, expressed in grammes, per millilitre, and the corresponding H_2SO_4 concentration obtained from the Table.

6. TEST REPORT

Give the following particulars :

(*a*) the reference of the method used,

(*b*) the results and the method of expression used,

(*c*) any unusual features noted during the determination,

(*d*) any operation not included in this ISO Recommendation or regarded as optional.

TABLE – **Relationship between density and concentration of aqueous solutions of sulphuric acid.**

Density at 20 °C g/ml	H_2SO_4 % (m/m)	Density at 20 °C g/ml	H_2SO_4 % (m/m)
1.000	0.26	1.225	30.79
1.005	0.99	1.230	31.40
1.010	1.73	1.235	32.01
1.015	2.48	1.240	32.61
1.020	3.24	1.245	33.22
1.025	4.00	1.250	33.82
1.030	4.75	1.255	34.42
1.035	5.49	1.260	35.01
1.040	6.24	1.265	35.60
1.045	6.96	1.270	36.19
1.050	7.70	1.275	36.78
1.055	8.41	1.280	37.36
1.060	9.13	1.285	37.95
1.065	9.84	1.290	38.53
1.070	10.56	1.295	39.10
1.075	11.26	1.300	39.68
1.080	11.96	1.305	40.25
1.085	12.66	1.310	40.82
1.090	13.36	1.315	41.39
1.095	14.04	1.320	41.95
1.100	14.73	1.325	42.51
1.105	15.41	1.330	43.07
1.110	16.08	1.335	43.62
1.115	16.76	1.340	44.17
1.120	17.43	1.345	44.72
1.125	18.09	1.350	45.26
1.130	18.76	1.355	45.80
1.135	19.42	1.360	46.33
1.140	20.08	1.365	46.86
1.145	20.73	1.370	47.39
1.150	21.38	1.375	47.92
1.155	22.03	1.380	48.45
1.160	22.67	1.385	48.97
1.165	23.31	1.390	49.48
1.170	23.95	1.395	49.99
1.175	24.58	1.400	50.50
1.180	25.21	1.405	51.01
1.185	25.84	1.110	51.52
1.190	26.47	1.415	52.02
1.195	27.10	1.420	52.51
1.200	27.72	1.425	53.01
1.205	28.33	1.430	53.50
1.210	28.95	1.435	54.00
1.215	29.57	1.440	54.49
1.220	30.18	1.445	54.97