ANNUAL REPORT
of TC 1.6 "Mass and related quantities"
for 2020 and 1st quarter 2021

1. GENERAL CHARACTERISTIC OF COOPERATION ACCORDING TO THEME AREA, INCLUDING INFORMATION ABOUT THE LIST OF WORKS PERFORMED AND / OR THEMES AND ON PARTICIPANTS OF COOPERATION

During the reporting period, the topics “Mass and related quantities” were conducted on 20 COOMET projects:

Ref. №	Subject	Project's state
758/CU/18	Supplementary bilateral comparison in the field of mass with the aim of detailed values of uncertainty for CMC-entry	Technical Protocol in preparation
773/UA/19	Supplementary bilateral comparisons in the field of sub-milligram mass measurement	Subject will be excluded due to damage of reference standards during transportation
764/UA/18	Supplementary comparisons in the field of mass measurements	Technical Protocol in preparation
665/UA-a/15	Supplementary bilateral comparison in the field of mass measurements	Report in preparation (draft A)
546/UA-a/11	Supplementary comparisons in the field of mass measurements	In progress
694/MD-a/16	Supplementary comparison of mass standards with nominal values of 100 mg, 20 g, 1 kg and 10 kg	Report in preparation (draft B)
737/UA/17	Bilateral comparison of national force standards	Project postponed
711/TR-a/16	Comparison of absolute pressure in the range 0,3 mPa to 0,9 Pa	Report in preparation (draft A)
589/UA-a/12	Supplementary comparison of national measurement standards of gauge pressure in the range from 1 MPa to 10 MPa	Report in preparation (draft A)
717/RU/17	Supplementary comparison of national reference instruments of the pressure unit in the range from 250 MPa to 1500 MPa.	In progress
651/RU-a/14	Supplementary bilateral comparison of national reference instruments for nanoindentation	Report in preparation (draft A)
638/UA-a/14	The comparison of the national hardness standards of Super-Rockwell scales.	Report in preparation (draft A)
560/UA-a/12	The comparison of the national hardness standards of Rockwell and Super-Rockwell scales.	Report published, publication of CMC of the participants in progress
788/UZ/19	Pilot comparison of the unit kinematic viscosity of a liquid at temperatures 20 °C (250-400 mm2/s), 25 °C (50-100 mm2/s), 40 °C (20-70 mm2/s), 60 °C (5-20 mm2/s)	In progress

Ref. №	Subject	Project's state
789/UZ/19	Pilot comparisons of fluid density in the range of from 600 to 1000 kg/m^3	In progress
769/UA/18	Supplementary bilateral comparisons in the field of small volume	In progress
766/GE/18	Supplementary comparison in the small volumes	In progress
762/UA/18	Supplementary comparisons in the field of the determination of density (volume) of solid body (weights)	Measurements in progress
545/UA-a/11	Pilot comparisons of fluid density in the range of from 600 to 1000 kg/m^3	In progress
822/GE/20	Pilot comparisons in the small volumes	In progress

Detailed information about the participants of certain topics can be found in the COOMET database on the COOMET website.

2 RESULTS OF THE LAST MEETINGS OF SOC AND SUBSIDIED TO THEM PC/TC

The results of the last SOK meeting in the form of a decision of the TC 1.6 meeting are given below:

1. To take into account the draft COOMET Roadmap for the implementation of decisions related to the redefinition of the basic units of the International System of Units SI in terms of unit of mass, to revise the COOMET Roadmap annually at the next meeting of the TC.
2. Update project's status in the COOMET and BIPM databases (see Appendix 3).
3. Annually analyze the state of art in the part of comparisons, especially in the part of comparisons lasting more than 5 years, discuss and take measures to complete these comparisons.
4. Submit to the JCMS the results of the discussion of the necessity and expediency of the development of COOMET Recommendations on ensuring the traceability of measurement results / standards in COOMET (COOMET project 812/ RU/20);
5. Approve the draft guidelines for high-precision mass measurements, send the draft for examination to interested TC members (this draft will be completed taking into account the proposals of the TC members and presented on the TC page as a TC recommendation);
6. To agree on the results of comparisons on COOMET projects 555/AZ-a/12 (COOMET.M.D-S1), 638/UA-a/14 (COOMET.M.H-S3).
7. To approve the updated list of TC technical experts (Appendix 4)
8. Create a working group, including the chair of the TC and chairpersons of the SCs for:
   8.1 development of a perspective work program TC 1.6
   8.2 development of the updated Regulation of TC 1.6.
9. Based on the results of the elections
   9.1 to extend the powers of the current chair of TC 1.6 Irena Kolozinska (Ukraine) for 4 years;
   9.2 to approve Alexander Tsiporenko (Ukraine) as the chairman of PC 1.6.2 "Force"
10. Register the proposed project in the field of pressure measurement in the COOMET database
11. Update the composition of the SCs in accordance with the proposals of the NMIs of Slovakia and Turkey.
12. Conducting the 26th TC 1.6 meeting online, in autumn 2021. Organization of the meeting - NSC "Institute of Metrology".

3 REVIEW OF COMPLETED PROJECTS AND INFORMATION ON THE USE OF THE RECEIVED RESULTS

An overview of the completed projects and information on the use of the results is shown in the table below:

Ref. №	Subject	THE RECEIVED RESULTS
722/AZ/17	Bilateral supplementary comparison of mass standards with nominal values of 100 mg, 2 g, 20 g, 500 g, 5 kg of accuracy class E2	The report is published in the Technical Appendix to the Metrology, prepared CMC are under review
670/GE/15	Comparisons of weight standards with a nominal value of 100 mg, 5 g, 50 g and 1 kg	The report is published in the Technical Appendix to the Metrology, CMC are published
528/KZ/11	Pilot comparisons of multiple and fractional units of a kilogram	The results were discussed at the TC meeting Topic completed.
341/RU/05	Key comparison of Brinell and Vickers hardness scales	The final report was sent to the participants in the comparisons and published by the KCDB and the journal Metrologia. Topic closed CMC of participants published or in the process of publishing
719/GE/17	Bilateral supplementary comparison in the Small Volumes range from 10μL to 100μL	The results of the comparisons were used for preliminary assessment of calibration and measuring capabilities of the participating countries and development of the quality management systems of participating NMIs.
767/GE-a/18	Bilateral supplementary comparison in the small volumes	The final report has been prepared for distribution to the participants in comparisons and publication in the KCDB. CMC of participants published
555/AZ-a/12	Supplementary COOMET comparisons in the field of density measurements	The final report has been prepared for distribution to the participants in comparisons and publication in the KCDB.
712/TR-a/16	Comparison of absolute pressure in the range 0,03 Pa to 13 Pa	Excluded
726/UZ-a/17	Comparison of stainless steel mass standards	Excluded
548/UA/11	Supplementary bilateral comparisons of submultiply and multiply units of kilogram	Excluded

4 ISSUES OF INTERACTION WITH INTERNATIONAL AND REGIONAL ORGANIZATIONS IN THIS AREA OF COOPERATION

TC 1.6 COOMET actively cooperates with the CCM BIPM, participating in Working Groups CCM by mass, hardness and pressure. TC 1.6 COOMET actively collaborates with a similar technical committee of EURAMET, as well as in EMPIR projects.

TC 1.6 COOMET members participate in such key comparisons performing by CCM:
CCM.H-K1 Key comparisons in Brinell hardness;
CCM.D-K3 Key comparisons in the field of solid body density measurements;
CCM.F-K3 Key comparisons in force in the range of 0.5-1 MN;
CCM.M-K7 Key comparisons of multiple and sub-multiply units of kilogram.
CCM.V-K4 Key comparisons in the field of viscosity on newton liquids.

Members of TC 1.6 participate in conferences of IMEKO working groups and seminars:
- BIPM Training on KCDB 2.0 as part of the CBKT BIPM Program, BIPM, November 2019.

Within the framework of the TC meeting, a webinar was held on redefining the kilogram; held and organized a webinar on working on the new KCDB platform for TC 1.3 - 1.6; the first joint with EURAMET online seminar on the calculation of uncertainty in the calibration of piston dispensers is planned.

5 WORKS TO PARTICIPATE IN THE IMPLEMENTATION OF INTERNATIONAL AGREEMENTS (FOR example, AGREEMENTS ON MUTUAL RECOGNITION OF NATIONAL STANDARDS AND CALIBRATION CERTIFICATES AND MEASUREMENTS ISSUED BY NATIONAL INSTITUTES)

During the reporting period, the following CMC were reviewed:

By CMC for COOMET countries:
Was published (edited) 25 lines in the field of mass, hardness, pressure, volume for the NMIs of Russia, Azerbaijan, Georgia, Ukraine.
By CMC from other RMOs:

More than 300 lines were examined in the field of mass and related quantities.

6 INFORMATION ON THE PROPOSED PLACE AND DATE OF THE NEXT MEETINGS OF JUICES AND SUBJECTS THERE OF PC/TC

See paragraph 2 of this report.

7 PROPOSALS FOR RESOLUTIONS OF THE MEETING OF THE COOMET COMMITTEE

None

Irina Kolozinskaya
Chair of TC COOMET 1.6