

Meeting of International Authorities under the Patent Cooperation Treaty (PCT)

Thirty-Third Session
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PROCESSING SEQUENCE LISTINGS

Document prepared by the International Bureau

SUMMARY

1. WIPO Standard ST.26 defines a set of recommendations which specify the required format for sequence listings filed as part of a national, regional or international application filed on or after July 1, 2022. Following adoption of version 2.0 of WIPO Standard ST.26, to enter into force on July 1, 2027, the International Bureau is preparing modifications to Annex C of the Administrative Instructions to implement the new version in the PCT. The International Bureau launched a new version of WIPO Sequence Suite in June 2026, the first official release of WIPO Sequence in three years. Version 3.2.0 of WIPO Sequence will be released in 2027 in time for the entry into force of version 2.0 of WIPO Standard ST.26.

2. Simplification of document types in ePCT and PATENTSCOPE has been completed. The document discusses issues concerning invitations to furnish a sequence listing for the purpose of international search under Rule 13~~ter~~ and reminds that correction of sequence listings should not be required solely because of errors in the bibliographic data.

BACKGROUND

3. WIPO Standard ST.26 provides a standard for the presentation in XML of nucleotide and amino acid sequences that form part of a patent application. It entered into force on July 1, 2022. Any disclosure of sequences in an international application filed on or after that date must be presented in compliance with the Standard. The current version of WIPO Standard ST.26, [version 1.7](#), entered into force on July 1, 2024, applying to all international, national and regional applications filed on or after that date.

4. This document provides updates on recent developments and presents certain challenges and possible ways to improve current practices for processing sequence listings. Document

[PCT/MIA/33/3](#) for this session and document [CWS/14/2](#) for the fourteenth session of the Committee on WIPO Standards (CWS) to take place from November 23 to 27, 2026, report on the work of the Sequence Listings Task Force established by the CWS.

DEVELOPMENT OF WIPO STANDARD ST.26

5. At its thirteenth session in November 2025, the CWS approved the first major revision to WIPO Standard ST.26, as [version 2.0](#), and approved the date of entry into force as July 1, 2027 (see document [CWS/13/33](#)). Version 2.0 captures two substantive changes:

- (a) the mandatory disclosure of nucleotide and peptide analogs using specifically defined symbols whenever possible; and
- (b) the lifting of the minimum sequence length requirement, optionally allowing the inclusion of short sequences – i.e., sequences with fewer than 10 specifically defined nucleotides or fewer than 4 specifically defined amino acids.

In addition, several editorial amendments were made to improve the quality of the Standard and new examples were added to Annex VI, the guidance document, to assist in understanding these changes.

6. An Editorial Note on the first page of version 2.0 of WIPO Standard ST.26 sets out the transition to the version 2.0 as follows:

“The Thirteenth Session of the Committee on WIPO Standards decided that version 2.0 of ST.26 will enter into force on July 1, 2027 and apply to all patent applications with a filing date on or after that date. Exceptionally, paragraph 8 of this Standard, concerning the minimum length requirement, will apply from the date of entry into force of version 2.0, independent of the filing date of the patent application concerned.”

7. As the CWS agreed at its thirteenth session, WIPO Standard ST.26 version 2.0 and its effective date at national, regional and international level was reported to the WIPO General Assembly in July 2026 (see document [WO/GA/60/8](#)). A notice will be published in the PCT Gazette shortly, formally recording the decision of the Director General to apply the revised version to international applications from that date, in accordance with paragraph 5 of [Annex C](#) of the Administrative Instructions under the PCT.

8. The International Bureau has prepared draft modifications to Annex C of the Administrative Instructions to implement version 2.0 of WIPO Standard ST.26 in the PCT. Taking into account informal feedback received on the draft modifications from the Sequence Listings Task Force, the International Bureau will issue a PCT Circular to consult with Offices and applicants on the proposed modifications.

WIPO SEQUENCE SUITE

9. The International Bureau has developed and makes available a software suite known as [WIPO Sequence Suite](#), which comprises two components:

- (a) WIPO Sequence: a desktop application, available for Windows, Linux and MacOS, to assist applicants to author and validate sequence listings in compliance with WIPO Standard ST.26; and
- (b) WIPO Sequence Validator: a web service deployed internally at a patent Office to verify compliance of filed sequence listings with WIPO Standard ST.26.

10. Document [CWS/14/3 Corr.](#) for the fourteenth session of the CWS, to take place from November 23 to 27, 2026, summarizes recent developments of the WIPO Sequence Suite and

reports on the launch on June 20, 2026, of WIPO Sequence Suite version 3.1.2, the first official release of WIPO Sequence in approximately three years. The latest version of WIPO Sequence Suite, version 3.1.3 fixes a major bug relating to annotation of modified bases. Release notes for official WIPO Sequence releases are available on the [WIPO Sequence and ST.26 Knowledge Base](#). The International Bureau is also preparing version 3.1.4, which addresses an issue with non-English qualifier values. It is anticipated that the release of version 3.1.4 will be published in November 2026. Development activities for version 3.2.0, which implements the changes in WIPO Standard ST.26 version 2.0, have concluded. The International Bureau will release version 3.2.0 in Q2 2027; the exact date of the release is still under discussion by the Sequence Listings Task Force.

DATA PACKAGE FORMAT FOR THE ELECTRONIC EXCHANGE OF PRIORITY DOCUMENTS

11. At its twelfth session, the CWS adopted WIPO Standard ST.92, entitled Recommendations on the Data Package Format for the Electronic Exchange of Priority Documents. A key benefit of the Standard is that it permits priority documents to be exchanged including sequence listings in XML format, instead of using either printouts or references to versions of the sequence listings held separately. As the first version of the Standard provided recommendations on patent priority documents only, the CWS further agreed, at the same session, that discussions should continue with a view to revising the Standard to incorporate recommendations concerning electronic exchange of trademark and industrial design priority documents. At its thirteenth session, the CWS approved the revision to WIPO Standard ST.92 as [version 2.0](#), which covers exchanging trademark and industrial design priority documents in ST.92 format as well as patent priority documents. The CWS also agreed on the sunset date, June 30, 2028, for the transition to electronically exchanging priority documents. As outlined in document [CWS/14/5](#) on Implementation of WIPO Standard ST.92 by Offices, the International Bureau has been supporting IP Offices in transitioning to the exchange of priority documents in compliance with WIPO Standard ST.92 version 2.0, taking into account each Office's WIPO DAS connection method, technical capacity and level of readiness.

PROCESSING OF SEQUENCE LISTINGS UNDER THE PCT

12. Since July 2022, the International Bureau has received approximately 48,000 international applications that contain a sequence listing. For most, the processing was simple and in line with expectations, but certain issues, some of which are presented below need further review and analysis.

SEQUENCE LISTINGS UNDER RULE 13^{ter}

13. The use of [Rule 13^{ter}](#) to request a sequence listing for the purpose of international search has decreased following the introduction of WIPO Standard ST.26, but not as much as expected. It had been hoped that international applications disclosing sequences requiring a sequence listing would all contain a WIPO Standard ST.26-compliant sequence listing, validated prior to submission and considered suitable for international search. However, around 13% of international applications with a sequence listing include a submission under Rule 13^{ter}. This includes:

- (a) cases where the sequence listing included in the international application as filed was presumably found to be defective, requiring a standard-compliant listing for search; and
- (b) cases where no listing had originally been submitted, but the international application disclosed sequences that should have been included in a listing.

14. Table 1 presents a snapshot taken in September 2026 of the number of international applications filed on or after July 1, 2022, for which the International Bureau had received a sequence listing of some type, broken down by receiving Office. The second to fifth columns show:

- (a) the number of international applications with any type of sequence listing on file;
- (b) the number of international applications including a Rule 13~~ter~~ sequence listing in addition to a listing that had been included in the international application as filed; and
- (c) the number of international applications including a Rule 13~~ter~~ sequence listing where the international application as filed contained no sequence listing.
- (d) the percentage of applications with sequence listings with a submission under Rule13~~ter~~.

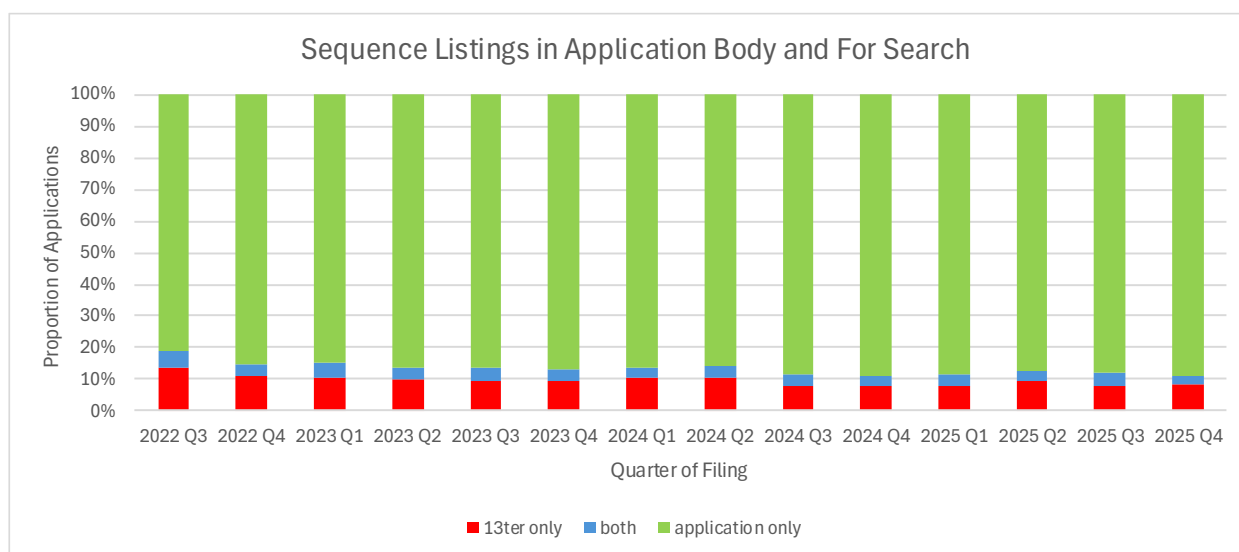
Table 1: Number of International Applications with Sequence Listings by Receiving Office

Receiving Office	Total with listings	Rule 13 ~~ter~~ in addition to listing as filed	Rule 13 ~~ter~~ submitted later only	Percentage of applications with Rule 13 ~~ter~~ submissions
AT	4			
AU	442		5	1.1
BG	1		1	100.0
BR	83		2	2.4
CA	417	5	51	13.4
CL	21		2	9.5
CN	12,417	16	133	1.2
CU	14	2		14.3
CZ	31		4	12.9
DE	13			
DK	7		1	14.3
EA	2			
EP	7,566	162	573	9.7
ES	93	6	3	9.7
FI	53	2	1	5.7
FR	61	3	3	9.7
GB	722	32	131	22.6
GR	5	1		20.0
HU	29		1	3.4
IB	1,879	92	184	14.7
ID	1	1		100.0
IL	503	49	5	10.7
IN	163	2	13	9.2
IT	24	1	4	20.8
JP	3,147	1	1	0.1
KR	3,594	1		0.0
LV	2			
MX	5	1	1	40.0

Receiving Office	Total with listings	Rule 13ter in addition to listing as filed	Rule 13ter submitted later only	Percentage of applications with Rule 13ter submissions
MY	7			
NL	76	1	73	97.4
NO	4		1	25.0
NZ	21		1	4.8
PE	4			
PH	2			
PL	53	7	5	22.6
PT	8			
QA	3		1	33.3
RS	1			
RU	72	3		4.2
SE	43	2	3	11.6
SG	312	1	5	1.9
SK	1		1	100.0
TH	15	3	6	60.0
TR	58		12	20.7
UG	1			
US	16,373	1,391	3,343	28.9
UY	1			
ZA	4			

15. Without determining why a listing was or was not requested under Rule 13ter in each case, it is difficult to determine the main contributing factors and how best to address them.

16. The table seems to suggest that it might be more common in some States than others for applicants to file international applications without a sequence listing as required under [Rule 5.2\(a\)](#). However, determining the exact extent of this is difficult, since some Authorities routinely invite the submission of a sequence listing if any relevant sequences are noted in the application body, whereas it appears that others may do so only if the examiner specifically considers that obtaining a sequence listing is necessary in order to perform a search effectively (some sequences may be irrelevant for this purpose, or else be easily extracted from the application body for the purpose). Consequently, there may be noticeable numbers of international applications not accounted for in this table, disclosing relevant sequences for which no sequence listing is ever furnished in the international phase.

Figure 1: Rates of Requirement of Rule 13ter Listings Over Time

17. Figure 1 shows the distribution of Rule 13ter sequence listings over time, based on the filing dates of the international applications. The bottom red bars indicate the proportion of applications where a Rule 13ter listing has been required because sequences have been found but no sequence listing was on file. The blue middle bars show the proportion of applications where sequence listings have been found where there was a sequence listing forming part of the application but it was in some manner defective and a replacement listing was required. The green top bars show the applications where the only listing on file forms part of the international application itself. Data for 2026 is not shown because the data for a significant proportion of these applications may still be incomplete. There appears to be a small rise in Q2 2025 for the number of Rule 13ter listings being requested where no sequence listing had been filed as part of the international application, before starting to drop again. It is not clear whether this represents a change in applicant behavior or International Authorities becoming more efficient at noticing sequences within the application body.

18. Overall, the proportion of applications where a Rule 13ter listing has been required has dropped significantly since the start of use of WIPO Standard ST.26. International Authorities could consider how to further improve the compliance of sequence listings submitted by applicants, noting that the receiving Office is not required to check for compliance with WIPO Standard ST.26. The most important issue would appear to be educating on the benefits of filing a Standard-compliant sequence listing as part of the description and how to create the sequence listing properly. A WIPO Standard ST.26-compliant listing is likely required in national phases whether it was strictly required for international search or not, and adding a sequence listing after filing always contains the risk of adding matter or introducing errors. Further consideration might also be given to whether tools available to applicants or built into filing systems can be improved to identify problems before applications are filed, as well as seeking to identify and address reasons that applicants turn to text editors or AI tools to further edit sequence listings before submission.

19. International Authorities are required to check the sequence listing contained in the application under paragraph 32 of [Annex C](#) of the Administrative Instructions under the PCT. The Authority may require the applicant to submit a sequence listing under Rule 13ter for the purpose of international search or preliminary examination if a defect is found in a filed sequence listing, or if the application body contains sequences that should have been included in a sequence listing but were not. The extent to which Authorities check for defects and when they require new sequence listings appears to vary considerably. During a recent session of the

Sequence Listings Task Force, the United States Patent and Trademark Office outlined a new AI-based system that they were developing to identify potential errors, particularly in the free text fields that cannot be validated by the WIPO Sequence Validator. While finding some false positives, this was highly effective in identifying potential errors for review by a human expert. Previously, formalities examiners only reviewed a sample of sequences when the sequence listing was lengthy, which had sometimes resulted in the applicant being requested to provide multiple replacement listings as national examination progressed to correct newly identified errors. While being requested to provide a new sequence listing to conduct an international search may be inconvenient, identifying errors prior to entering the national phase and preparing a correction may be beneficial to the applicant as well as the Office.

20. Noting that a sequence listing submitted under Rule 13~~ter~~ does not form part of the international application, International Authorities could review international searches and preliminary examinations with Rule 13~~ter~~ submissions and criteria used in determining whether to issue an invitation to furnish a sequence listing under Rule 13~~ter~~. Authorities could also consider if any criteria could be added to the International Search and Preliminary Examination Guidelines to achieve more consistent practice between Authorities.

VERSIONS OF SOFTWARE USED

21. Following an analysis of all sequence listings made available with international applications published in 2025, it is apparent that a significant number of applicants use outdated versions of WIPO Sequence. This will not automatically render the sequence listing invalid and for the most part simply means that the applicant missed out on new features which became available in a later version. However, version 2.1.0 (used for 190 sequence listings in the sample) had a bug that significantly affected the listings created in certain circumstances. The extent (and speed) of validity checking has also constantly increased, so that applicant errors are more likely to be caught by later versions.

22. Over 900 listings in this sample forming part of the international application as filed had been created apparently using a version of WIPO Sequence that was over six months old on the date that the sequence listing was reported as having been created. Some were from versions that were already obsolete before WIPO Standard ST.26 had officially come into force in July 2022.

23. Just over 100 sequence listings in the sample were reported as having been created by software other than WIPO Sequence. However, at least 660 sequence listings (around 5% of the total) indicated as created by WIPO Sequence had obvious characteristics that demonstrated that the sequence listing had either originally been generated by other software, or else had been modified after creation and not re-validated by WIPO Sequence following the modification. Manual editing of sequence listings is a likely cause of at least some of the errors subsequently found during processing.

24. It would be highly desirable to encourage applicants to update their software regularly to the most up-to-date version, and to report reasons for which they might feel it necessary to manually edit listings. Regular updating could reduce the number of Rule 13~~ter~~ listings. Some of the reasons known from early versions of WIPO Sequence have been addressed by improving the bulk edit facilities and the International Bureau is keen to ensure that the software continues to improve to meet significant user needs. WIPO Sequence includes an auto-update mechanism that indicates to the user that their version is out of date, but the user needs to approve the installation of the update and can ignore the update message.

DOCUMENT TYPES FOR SEQUENCE LISTINGS

25. Simplifications have been made to the range of document types related to sequence listings in ePCT and PATENTSCOPE to make it easier for applicants and formalities examiners to understand and select the correct document types for special cases and reduce human error

due to confusion between multiple similar document types. The revised document types have been published in [PCT Newsletter No. 04/2026 \(April 2026\)](#).

CORRECTIONS OF BIBLIOGRAPHIC DATA

26. Currently some receiving Offices check the bibliographic data in the sequence listings and invite the applicant to submit corrections under [Rule 26](#). Since July 2022, the International Bureau has received around 213 sequence listings corrected due to defects in the applicant name, priority date, invention title etc. The bibliographic data in the general information part of the sequence listing is included as a guide to help identify cases where the wrong listing has been submitted, rather than being a definitive source of information. According to paragraph 28 of Annex C of the Administrative Instructions, the receiving Office may draw attention to discrepancies but should not require correction; the processing should proceed based on the relevant data as set out in the request. To reduce the number of such corrections, the bibliographic data in the sequence listings could be either simplified or not necessarily checked by the receiving Offices. Whether the content of the general information should be modified is a current topic of discussion for the Sequence Listings Task Force.

LANGUAGE ISSUES

27. While there has not been a detailed analysis as yet, it is noted that the arrangements for dealing with different language versions of language-dependent free text do not always seem to be used as expected in the international phase.

28. One specific point that has been observed but not quantified is that the language-dependent free text included in the `INSDQualifier_value` element is sometimes in languages other than English. According to WIPO Standard ST.26, this element can only contain the English qualifier value. WIPO Sequence and the WIPO Sequence Validator check only that the characters provided within this element use Latin characters, those acceptable according to paragraph 40(b) of WIPO Standard ST.26, but cannot make any attempt otherwise to validate the language of the text.

29. Table 2 shows the indicated original language (if any) of sequence listing free text for the sequence listings originally filed as part of the application body for international applications published in 2025. A majority of sequence listings do not indicate the original language. Interestingly, the proportion indicating the original language is much higher for international applications published in English than for other languages of publication, even though very few of those include non-English free text qualifier values.

Table 2: Indicated original languages of sequence listing free text, by publication language of the international application

Sequence listing indicated original language (* = no language indicated)													
Pub lang	de	en	es	fr	it	ja	jv	ko	pt	ru	zh	*	Total
de	5	3										31	39
en	1	1980	2		1	1						5159	7144
es		5	5									21	31
fr		2		3								36	41
ja		22				16	2					707	747
ko		36						12				741	789
pt									4			14	18
ru										3		10	13
zh		68									158	2053	2279
Total	6	2116	7	3	1	17	2	12	4	3	158	8772	11101

30. Furthermore, even though there are many sequence listings filed where the language-dependent free text does not match the language of publication, very few translations are required in the international phase. Since the use of WIPO Standard ST.26 came into force in July 2022, only 10 translations of sequence listings have been received for the purpose of search and one for the purpose of publication. This flexibility to handle sequence listings with free text in other languages is explicitly intended and encouraged by [Rule 12.1\(d\)](#), but it had been expected that more receiving Offices and International Authorities would nevertheless be strict with language requirements. For the purpose of knowing whether it is desirable to encourage applicants to comply voluntarily with specific language requirements during the international phase, it would be interesting to know the extent to which translations are being required during the national phase. A recent change to WIPO Sequence Validator in version 3.2.0 supports the inclusion of a language attribute which identifies the language that the language-dependent free text qualifiers have been provided in the sequence listing. As a result, future analysis of sequence listings filed at the International Bureau may provide additional insight into this.

31. The Meeting is invited to note the contents of document PCT/MIA/33/7 and provide any comments for further review and analysis of processing of sequence listings under the PCT, as discussed in paragraphs 12 to 30, above.

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