Revision of JIS Z 0105 "Transport packages—Dimensions of Transport packages by Modular coordination" and JIS Z 0161 "Dimensions of Unit Load Sizes"

Introduction

Packaging is essential to the trading of goods both in Japan and overseas. So standization of package dimensions is a key factor to the efficiency in international logistics. Therefore it is very meaningful to have two key logistic factors standardized:
i) packaging modular dimensions, which are mathematically obtained from common components used in the logistic system, and ii) related unit load sizes. With respect to these standardization factors, the revision of two Japan Industrial Standards (JIS) standards, JIS Z 0105 "Transport packages—Dimensions of transport packages by modular coordination" and JIS Z 0161 "Dimensions of Unit Load Sizes," was announced on March 20, 2015. This document will briefly describe how these two JIS revisions were revised.

Firstly, it became necessary to revise the second edition of the International Organization for Standardization (ISO) standard 3394, established in1984, which provided for the fundamental dimensions of package modules. The revision draft of this standard was discussed based on a proposal presented by Japan. As a result, in 2012, ISO 3394 was revised and the third edition was issued largely based on the views supported by Japan, South Korea and the US. The proposal was primarily based on Japan's JIS Z 0105 effective at that time, but reflection of views from South Korea and the US made provision details and standard structure of the new ISO quite different from the then current JIS Z 0105. Thus it became necessary to revise the JIS standard accordingly.

On the otherhand, unit load dimensions, which are necessary for efficient intermodal transportation of packaged cargo, were stipulated in ISO 3676. The revision of the first 1983 edition was also discussed based on a proposal made by Japan. As a result, in 2012, the second edition was issued with the views from South Korea and the US incorporated. Here again, this ISO was largely based on JIS Z 0161, then effective, but reflection of views from South Korea and the US made some parts of the Japanese standard different from the corresponding ISO. So it became necessary to revise this JIS, too.

At that time, it was a national agenda to promote and support effieciency in logistics in Asia. Therefore integration of the related JIS standards and international standards was expected to enhance the globalization of not only the packaging industry but also other industries, and thus to contribute to efficiency in international trade, promotion of overseas cooperation, and mutual understanding between different countries. Therefore, it had become strongly demanded to widely promote in Japan the module dimentions and unit load sizes that are consistent with the international standards in view of internationalization of cargo logistics.

Here, because of the space limitation, backgrounds of the JIS revision, process and discussion points as well as future challenges will briefly be introduced. For further details of JIS Z 0105 and JIS Z 0161, these standards are publicly available at the Japanese Standards Association (JSA).

1. Revision History of JIS Standards

JIS Z 0105 Transport packages—Dimensions of transport packages by modular coordination

JIS Z 0105 was first established in September 1970, titled "Dimensions of packaging module," aimed to promote intermodal palletizaion in Japan. It was issued together with JIS Z 0601 "Flat pallets for through transit."

In October 1998, JIS Z 0105 was again reviewed in line with the international standard ISO 3394, and and JIS Z 0105 "Transport packages—Dimensions of transport packages by modular coordination," the previous edition to the current one, was made. In this revision, there were two types of package modules stipulated: 600 mm×400 mm and 550 mm×366 mm, with packaging module dimsions set in acoordance with ISO 3394. The Annex (Normative) listed transport package dimensions corresponding to seven pallet sizes (1100 mm×800 mm, 100 mm×900 mm, 1100 mm×1100 mm, 1300 mm×1100 mm, 1400 mm×1100 mm, 1200 mm×800 mm, 1200 mm×1000 mm).

JIS Z 0161 Dimensions of Unit Load Sizes

As unit load standardization was recognized as more and more important, the establishment of the former JIS Z 0161:1984 dates back to 1968, when Japan participated in the efforts for the standardization of unit load dimensions in the International Organization for Standardization (ISO) at Sub Committee SC 1 "Packaging dimension" under the Technical Committee TC 122 "Packaging."

In Japan, the standardization was investigated from 1978 as part of "Research into Standardizaton of Logistics-Related Devices, Equipment, etc.," undertaken as a

comissioned research project by the Japanese Council of Logistics Management (JCLM), currently known as the Japan Institute of Logistycs Systems (JILS), for the incorporation of unit load dimensions in a JIS standard. The JCLM prepared a draft standard.

It was examined by the Japan Packaging Institute (JPI) and its proposal of a new JIS standard was prepared with some modifications made to the original draft. The Japanese Industrial Standards Committee (JISC) deliberated the proposal and adopted it in 1983, and thus JIS Z 0161, the previous edition to the current, was established in 1984.

2. Revision history of ISO

For the ISO revision, Japan proposed to incorporate 1100 mm×1100 mm (accepted in 2003 in the international pallet standard ISO 6780 "Flat pallets for intercontinental materials handling—Principal dimensions and tolerances") in both ISO 3394 "Packaging module dimensions" and ISO 3676 "Unit load dimensions," in the 2006 ISO/TC 122 (Packagin) meeting held in Atlanta. In the process of the deliberation, it was adopted that Ad Hoc Group 1 be formed and that Japan, as the ad hoc group leader, prepare a revision proposal of the standard. The idea at that time was to make it an adendum to the original main standard. Thus the revision efforts began.

The challenge in the ISO 3394 revision was how to balance various dimension systems of other countries with the Japanese standard. Japan prepared and submitted a revision proposal based on the JIS standard in which packing modules were 600 mm×400 mm and 550 mm×366 mm. On this proposal, deliberation and voting continued. However, before the voting of the final draft international standards (FDIS), the addition of the US-proposed inch-based 1219 mm×1016 mm size was resolved in the parallely held deliberation on ISO 3676, making a total of four planar dimensions together with 1200 mm×1 000 mm, 1200 mm×800 mm and 1100 mm×1100 mm. Then Korea proposed a module dimension of 600 mm×500 mm, compatible to these multiple dimensions, and the addition of this was adopted, making a total of three packing module dimensions together with 600 mm×400 mm and 550 mm×366 mm. With these modifications, ISO 3394 was finally revised.

In the ISO 3676 revision, it was critically necessary to solve the differences between ISO 3676 and JIS Z 0161 in terms of the maximum unit load dimensions. The ISO 3676: 1983 stipulated 1200 mm×1000 mm as the maximum, while the JIS stipulated 1240 mm×1040 mm, 40mm greater, as the maximum.

These differences were solved when Japan prepared and proposed an ISO revision by stipulating 1200 mm×1 000 mm and 1100 mm×1100 mm as "nominal dimensions." Examples of determination of maximum dimensions were introduced in Annex (Informative), and thus the maximum dimensions of 1200 mm×1000 mm and 1240 mm×1040 mm also remained valid.

With proposals presented by Japan as mentioned above, these standards were revised and the third edition ISO 3394 "Packaging—Complete, filled transport packages and unit loads—Dimensions of rigid rectangular packages" and the second edition of ISO 3676 "Packaging—Complete, filled transport packages and unit loads—Unit loads dimensions" were established in 2012.

3. Establishment of JIS revision drafting committee

In line with the revised ISO standards, discussion began in Japan to revise related JIS standards, including solutions to the differences between international and JIS standards. For the discussion, the JPI formed a committee for drafting JIS revisions on August 2013 and began drafting efforts to revise the related former JIS standards based on the mew ISO standards. This matter would affect extensive sectors in the packaging and transport industries. So a large number of experienced personnel in practical areas of packaging and transport businesses, beneficiaries of packaging and transport industries, related companies, industry association representatives and government officials participated in these efforts. The committee discussed basic policies, while subcommittees composed of experts with practical background took up specific drafting efforts based on the basic policies given.

4. Main issues on JIS revision discussion

Now, some of the points discussed in the subcommittee for the revision of JIS Z 0105 and JIS Z 0161 will be introduced in an effort to show the process of the revision efforts.

JIS Z 0105 Transport packages—Dimensions of transport packages by modular coordination

One of the main issues in preparing a revised JIS Z 0105 draft was how to handle the Annex that was not icluded in the corresponding ISO standard, or in other words, how to handle the "Transport packaging dimensions" which were annexed to the former sandard. One discussion point was as to whether to keep the Annex (Normative) or delete it from the revised standard. Secondly, if keeping the

Annex, whether to continue showing all the seven pallete dimension types (1100 mm×800 mm, 1100 mm×900 mm, 1100 mm×1100 mm, 1300 mm×1100 mm, 1400 mm×1100 mm, 1200 mm×800 mm, 1200 mm×1000 mm, as referred to before) included as packaging dimension standards in the former Annex, or to show only typical dimensions (for example, 1100 mm×1 100 mm and 1200 mm×1000 mm). Thirdly, if the Annex remains then whether to designate make it "normative" to be complied with, or just for "informative" purposes.

During the subcommittte discussion the first point, whether to keep the "Tranport packaging dimension" in the Annex or not, unfortunately, discussion was split into two and no conclusion was reached. Those who wished to delete it gave points that if the unit load dimension referred to in ISO 3676 were to be introduced in the JIS, then the most desirable planar module dimensions for unit load was 1200 mm×1 000 mm out of the four types of planar dimensions (1200 mm×1 000 mm, 1200 mm×800 mm, 1100 mm×1 100 mm and 1219 mm×1016 mm) shown in ISO 3676; this dimension was reached from the 600 mm×400 mm-based module, and it would be a logistics modular element as it was; so modular unit load system should be pursued in the future, and the main body standard without Annex was sufficient: another supplement view referred to the structure of the standard, the Annex being larger than the main standard, which was not appropriate.

Those people who support to keep the Annex said that the palet size 1100 mm×1100 mm was widely used for intermodal transport because of the advantage that a number of differenct package dimensions could be taken in this pallet size due to pin-wheel load; it had been strongly promoted and, as a result, it was supposed that a lot of businesses had depended on this packaging size; so it was too early to delete it at all, and it was better to discuss wheter to include transportation package dimensions in the Annex at the next time of revision.

Concerning the second subject, what examples to show in the Annex, more people supported the idea of indicating only two types, 1100 mm×1100 mm and 1200 mm×1000 mm, so the discussion results supported this idea. As to the third point, the sub-committee discussion results were that package dimensions should be shown just for informative purposes in conjunction with the intended natural and smooth promotion of modular unit load system. Following the discussion in the sub-committee, two standard revision proposals were prepared, one with the Annex and the other without, and it was sent to the plenary committee meeting for discussion. After relevant discussion, the committee reached the following conclusions: 1) the new standard will have Annex JA, 2) the Annex will be prepared as "informative," and 3) the Annex will show only two module dimensions,

1100×1100mm and 1200×1000mm, which are specially helpful to JIS users in practical sense.

JIS Z 0161 Dimensions of Unit Load Sizes

The discussion was focused on whether the planar dimensions match the actual logistics situation in Japan. Planar dimension 1219 mm×1016 mm is inch-based, and inch-based dimensions are used in Japan very rarely; only used in the US and some other countries in the world. However, the discussion conclusiong was to keep the 1219 mm×1016 mm in the standard, because JIS standards should be prepared consistently with ISO standards in view of establishing common standards for international trading.

5. Future Challenges

Concerning the handling of the Annex, the explanation given in the former JIS Z 0105 "Transport packages—Dimensions of transport packages by modular coordination" indicated that the inclusion of the Annex should be reviewed in careful consideration of the actual promotion status of packaging module dimensions. In the revision this time, only two dimensions, 1100 mm×1 100 mm and 1200 mm×1000 mm, were kept in the standard, since there were a number of applicable package dimensions and the reference was considered to be beneficial for practical usage. Agreement has been reached to continue to review the treatment of Annexes in the JIS standard.

The inclusion of a series of inch-based dimensions is another issue here, and so it is for JIS Z 0161 "Dimensions of Unit Load Sizes." It was agreed to discuss this point in line with the discussion concerning the revision of ISO 6780:2003 "Flat pallets for intercontinental materials handling—Principal dimensions and tolerances."

Reported by Japan Packaging Institute