

NIKE, INC. PACKAGING DESIGN REQUIREMENTS

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:: NIKEGOLF 

VERSION 1.0

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Always visit [Nike Chemisty Playbook Page](#) to verify that you have the most recent version of the PDR



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INTRODUCTION TO NIKE'S PACKAGING COMPLIANCE DOCUMENTS

Dear Nike Inc. Supplier:

This document represents the updated **Packaging Design Requirements (PDR)** for Nike Inc. This information is intended to give packaging design requirements in order to ensure that:

- ✓ Nike Inc. packaging complies with global legislation
- ✓ Appropriate standard packaging test methods are utilized
- ✓ Nike Inc. packaging is designed and produced with environmental sustainability in mind
- ✓ Nike Inc. packaging is designed to survive Nike's supply chain and protect the product

This document updates the mandatory standards, restrictions, and appropriate test methods for packaging that Nike rolled out in 2003. Packaging (made of any substrate) is defined by the *Packaging and Packaging Waste Directive 94/62/EC (as amended by 2004/12/EC)* and the Coalition of Northeastern Governors (CONEG) model legislation.

Compliance with the PDR is **required**. We fully expect all Nike Inc. packaging designers/developers, packaging vendors, contract factories and licensees (hereafter "supplier") to have been in compliance with Nike requirements upon receipt of the PDR, initially released December 1, 2005 in the PRSL, and any subsequent PDR releases, or from the first date of obligation under the applicable regulations, whichever is earlier.

Nike may perform random testing to monitor and ensure compliance with these standards. Nike recognizes that compliance as mandated by this PDR may require changes for some suppliers, therefore, we are committed to providing clear instructions and all reasonable assistance to you.

Please note that as legal or consumer requirements develop and change, Nike will update and maintain this PDR as required. We are committed to working with you to give you as much advance warning as possible of any new requirements to be incorporated into these standards.

Thank you in advance for your goodwill and cooperation during this process, and for your commitment to helping Nike Inc. build the best possible products. We look forward to working with you on this vitally important matter.

Kind Regards,

Chris Braun
Materials Sourcing Sr. Director
Nike Global Procurement

Cindi Dykeman
Corporate Product ID Sr. Manager
Global Apparel & Equipment Product ID

Kevin Carsh
Global Packaging Operations Director
Nike Global Procurement

Rich Hastings
Footwear Packaging Sourcing Manager
Nike Global Packaging Procurement

Emma Hollander
Apparel & Equipment Packaging Sourcing Manager
Nike Global Packaging Procurement

Steve Kobak
Apparel & Equipment Packaging Operations
Nike Global Packaging Procurement



COMPLIANCE WITH THE PDR

Nike understands that certain requirements can only be met by those involved in the design, development or conceptualization of the packaging. Therefore, suppliers providing packaging components who are involved in, or are responsible for the design are also required to address certain design requirements. All other suppliers should be aware of these requirements. Nike may perform random testing to monitor and ensure compliance with these standards.

Nike supplier agreements reflect the need for compliance with the Packaging Design Requirements. The below outlines the maintenance responsibilities and data collection requirements of the parties supplying packaging components and those involved in the design, development, or conceptualization of the packaging.

Only packaging components/systems that pass the PDR testing as outlined may be produced. ***If a packaging component/system fails the PDR testing, please contact your Nike representative listed below immediately.***

- ✓ **Compliance with the PDR is required.**
- ✓ **We require all packaging vendors to sign and return the current Nike PDR Acknowledgement Form. (Page 5)**
- ✓ **Nike only accepts results from Nike Inc. approved laboratories. (Page 12-13)**
- ✓ **All testing results and certifiable information regarding compliance and supporting documentation must be made available to Nike within three (3) business days upon request of results.**
- ✓ **A packaging technical file (or Data Collection Document (DCD)) is required to be submitted to Nike for each component produced.**
- ✓ **All technical files and test results must be retained for at least ten (10) years.**
- ✓ **Nike expects its suppliers to conduct the design testing (if applicable) at a minimum of every two (2) years for each packaging component.**

Performance Testing: Please note that while packaging *performance* testing is not a requirement, it is encouraged. Performance responsibility falls to the supplier. Nike has outlined a series of performance testing suggested (but not limited to) tests on Page 32-35 and testing labs on Page 12-13.

NIKE PACKAGING CONTACTS

Primary

Sara Griesbach
Packaging Engineer
Nike Packaging Procurement
Sara.Griesbach@nike.com
971.978.8180

Secondary

Kevin Carsh
Packaging Operations Director
Nike Packaging Procurement
Kevin.Carsh@nike.com
503.671.2748



ACKNOWLEDGEMENT AND CERTIFICATE OF COMPLIANCE, Version 1.0

Please detach the Acknowledgement Form and Receipt located below and return the signed original to Sara Griesbach. Contact information on Pg 4.

NIKE PACKAGING DESIGN REQUIREMENTS (PDR) ACKNOWLEDGEMENT FORM & RECEIPT

The undersigned has read this Nike PDR and information packet thoroughly and understands its contents.

The undersigned hereby (i) acknowledge receipt of the NIKE Packaging Design Requirements (PDR) List Version **1.0** (the “Manufacturing Standards”), (ii) agrees that the Manufacturing Standards shall be incorporated into, and become part of, any current manufacturing or supply agreement between NIKE, Inc. and the undersigned (the “Manufacturing Agreement”), and (iii) represents and warrants to NIKE, Inc. and its suppliers that all products sold to NIKE Inc. or their suppliers shall be manufactured, packaged and delivered in accordance with the Manufacturing Standards and that all required documentation is maintained, including completion of all technical files. This data must be made available to Nike within 3 days of a request from Nike. All products sold to Nike and its suppliers must fully comply with the current PDR and any new PDR releases, or the date of first obligation under the regulation, whichever is earlier.

Company Name: _____

Signature: _____

Title: _____

Date: _____

The below to be completed and returned by Nike Global Packaging Operations Department and referenced in completion of packaging technical files:

Nike Returned Acknowledgement Reference Number: _____



PDR: DESIGN REQUIREMENTS

This section is intended to provide detailed information on Nike’s design policies related to legislated and/or Nike specific requirements for packaging. Nike understands that certain requirements can only be met by those involved in the design, development or conceptualization of the packaging. Therefore, suppliers who supply packaging components are also required to address certain design requirements. All other suppliers should be aware of these requirements. If requirements cannot be met, immediately contact your Nike packaging representative.

PACKAGING TYPE	REQUIREMENT	REQUIREMENT DETAILS	REFERENCES
All Packaging These requirements are mandatory for all Nike packaging composed of ANY material. See additional materials specific requirements on subsequent pages.	Source Reduction	The packaging developer must be able to demonstrate that the minimum adequate weight/volume of packaging has been used: That the packaging component cannot be further reduced without affecting critical areas.	Page 15
	Empty Space	All apparel and toy packaging must contain less than 10% of empty space. All other packaging must contain less than 25% less empty space.	Page 16
	Layering Limitations	Apparel packaging may not exceed one (1) layer. All other packaging may not exceed two (2) layers.	Page 16
	Recoverability Requirements	All packaging components must meet at least one of the following end-of-life recovery routes: Recycling/Reuse Composting/Biogasification Incineration (w/ energy recovery)	Recycling: Page 17 Composting: Page 18 Energy Recovery: Page 17
	Recycling Impediments	Impediments to recycling systems must be minimized.	Page 19-25
	Active Packaging Restriction	No Active Packaging is allowed	Nike Restriction
	Magnet Restriction	No magnets detected	Nike Restriction
	Polyvinylchloride (PVC) Restriction	Must not be detected at all	Restrictions in South Korea & Nike Restriction

**PDR: DESIGN REQUIREMENTS** CONTINUED

PACKAGING TYPE	REQUIREMENT	REQUIREMENT DETAILS	REFERENCES
Paper Materials These requirements are in addition to the “All Packaging” requirements listed above.	Minimum Recycled Content	All paper and paperboard packaging should contain at least 50% recycled material with at least 25% being post-consumer material unless higher standards have previously been set.	Nike Restriction
	Forest Resource Restriction	Nike encourages the sourcing of Forest Stewardship Council (FSC), Sustainable Forestry Initiative program (SFI), or the Programme for the Endorsement of Forest Certification (PEFC) certified products. The use of materials derived from wood or pulp originating in native old growth or frontier forests is <u>prohibited</u> .	https://ca.fsc.org/
Plastic Materials These requirements are in addition to the “All Packaging” requirements listed above.	Restrictions on Foamed Plastic	Nike prohibits the use of foamed plastics, including but not limited to: Expanded Polystyrene (EPS), Expanded Polypropylene (EPP), expanded polyethylene (EPE), and polystyrene Paper (PSP).	Various city-level regulations in California and New York City.
	Restriction on Degradable Plastics	Nike prohibits the use of degradable and compostable plastic packaging additives, including, but not limited to biodegradable, photo degradable, Oxo degradable and degradable additive enhanced plastic. Nike will allow the use of non-petroleum based plastics on a case by case basis, based on the potential for specific packaging components to enter recycling streams. All non-petroleum plastic options must be approved by Petra Knapp, Packaging Sustainability Engineer, or Kevin Carsh, Packaging Operations Director	Nike Restriction (multiple countries reviewing possible restrictions)
	Minimum Recycled Content	All rigid plastic packaging must contain a minimum of 25% post-consumer recycled content. Rigid plastic packaging: Holds between 8oz – 5 fluid gallons Is made entirely of plastic (except for certain components) Is capable of maintaining its shape while holding product and has a relatively inflexible form	http://www.calrecycle.ca.gov/plastics/rppc/ Also supported by legislation in Oregon (ORS 459A.650-665) and Wisconsin (Statutes section 100.297).
	Metallic Pigments Restriction	PET packaging may not contain any metallic pigments	State of Rio de Janeiro, Brazil, Law 5.286/2008



PDR: DESIGN REQUIREMENTS CONTINUED



PACKAGING TYPE	REQUIREMENT	REQUIREMENT DETAILS	REFERENCE
Wood Packaging These requirements are in addition to the “All Packaging” requirements listed above.	Packaging Requirements for Wood	Heat Treatment to 56° C to the core for 30 minutes. OR Fumigation by Methyl Bromide according to the outline in the Appendix page 22.	Page 14 And www.ipcc.int/
Synthetic textiles, Natural textiles, and leather packaging components	Please refer to the Nike Product RSL document for testing guidance on leathers and textiles. http://www.nikeincchemistry.com/restricted-substance-list		



PDR: LABELING REQUIREMENTS

Labeling in the section pertains to labeling that is required based on the packaging type only. This is not product-relevant labeling.

Contact your Nike Packaging Sustainability representative (Petra.Knapp@Nike.com) on how to use and apply the following labeling.








PACKAGING TYPE	REQUIREMENT	REQUIREMENT DETAILS	REFERENCE
All Packaging Material Types	Green Dot: GLOBAL 	The Green Dot is required to appear on packaging in the EU. It is globally a registered trademark. Use on <u>global</u> or <u>EU-based packaging</u> . Design Requirements <ul style="list-style-type: none"> Color: The darker arrow should be PMS 366C, the lighter should be 343C. However, any two colors may be used, the darker of the two colors should remain per diagram at left. Blind embossing (non-colored) is not permitted. Size: Suggested min size is 10mm. Absolute minimum size is 6mm. Position: Visible at time of purchase (outward facing) and remains visible throughout the life of the packaging Exclusions: Sales/Retail packaging only. Not required on transport packaging. 	http://www.pro-e.org/Frequently_Asked_Questions.html
	Japanese Material Marking: JAPAN 	Japan Packaging Identification Marking is meant to identify various packaging elements for disposal in Japan. Required on all packaging going to Japan. There are MULTIPLE material symbols. Contact your Nike representative for how to use and apply labeling. Design Requirements <ul style="list-style-type: none"> Marking Method: May be any contrasting color or embossing. Size: Vertical suggested min size is 10mm. Absolute minimum size is 6mm (8mm for embossing). Position: Visible at time of purchase (outward facing) and remains visible throughout the life of the packaging Exclusions: Corrugated cardboard. Sales packaging only. 	http://www.meti.go.jp/policy/recycle/main/data/pamphlet/pdf/mark_Indication.pdf http://www.meti.go.jp/policy/recycle/main/data/pamphlet/pdf/e_all.pdf
	ENVIRONMENTAL CLAIMS	Intent to introduce or sell to Nike a package or packaging component with any type of environmental benefit or environmental claim will require mandatory review and approval (in accordance with United States Federal Trade Commission (FTC) Guides and similar global guidelines for the use of environmental marketing claims and applicable state requirements). Items or claims to be reviewed should be sent directly to The Nike Global Packaging Sustainability primary contact: Petra Knapp (Petra.Knapp@nike.com , 503.532.6222)	http://www.ftc.gov/news-events/media-resources/truth-advertising/green-guides
	REUSE CLAIMS	For packaging components that are claimed to be reusable , partners must provide written confirmation that the packaging is capable of reuse and meets the nine point verification procedure for reuse in EN 13429. Have claims of “reusable packaging” verified with Global Packaging Sustainability contact before issuance of packaging into the market.	CEN EN 13429



PDR: LABELING REQUIREMENTS CONTINUED

Labeling in the section pertains to labeling that is required based on the packaging type only. This is not product relevant labeling.

SPI Resin Identification Codes were developed to better assist recyclers in sorting various types of plastic packaging entering the recycling stream. Application of SPI codes have been signed into law in 39 states in the US and multiple countries globally. ****Please note the symbol for the codes is due to be adjusted in the near future.** Nike will alert recipients of the PDR when this change occurs. However, plastic packaging suppliers are required to maintain vigilance for this change and make necessary adjustments when the new symbols are adopted by participating governments.

PACKAGING TYPE	REQUIREMENT	REQUIREMENT DETAILS		REFERENCE
All plastic packaging	SPI Code: US, Croatia, Taiwan, (South Korea uses a similar format)	Resin Code	SPI Code	http://www.plasticsindustry.org/AboutPlastics/content.cfm?ItemNumber=823
		PET (polyethylene terephthalate)		
		HDPE (high density polyethylene)		
		PVC (polyvinyl chloride)	 <i>Banned substance</i>	
		LDPE/LLDPE (low density polyethylene)		
		PP (polypropylene)		
		PS (polystyrene)		
		Other Plastics (or blended plastics)		



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TESTING INSTRUCTIONS

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APPENDIX – PDR and PRSL: Nike Approved Packaging Test Laboratory Information

<p>LABORATORY KEY</p> <p>Labs performing both Chemical and Performance Testing</p> <p>Labs performing only Performance Testing</p> <p>Labs performing only Chemical Testing</p>	<p>INTERTEK-Taiwan Intertek Testing Services Taiwan Ltd. 8F., No. 423, Ruiguang Rd., Neihu District, Taipei 114, Taiwan Chemistry Contact: KY Liang, Divisional Head Analytical Chemistry Email: k.y.liang@intertek.com Tel: 886-2-66022236 Performance Contact: Rita Shih E-mail : rita.shih@intertek.com Tel.: 886-2-6602-2888 ext 803</p>	<p>INTERTEK-Shanghai Intertek Testing Services Ltd, Shanghai. 2/F, Building No.4, Shanghai Comalong Industrial Park, 889 Yi Shan Road, Shanghai 200233, China Chemistry Contact: Jane Wu Sr. manager, Customer Services, Email: Jane.wu@intertek.com Tel: 86-21-64954601; 86-21-60917026 Performance Contact: Faye Guan E-mail : faye.guan@intertek.com</p>	<p>INTERTEK-Hong Kong Intertek Testing Services Hong Kong Ltd 4c Garment Centre 576 Castle Peak Road Kowloon, Hong Kong Contact: Kaye Leung, Client Services Supervisor/ Samantha Ng Email: kaye.leung@intertek.com / samantha@intertek.com Tel: 852-21738215/ 852-2173-8215</p>
<p>SGS-Korea SGS Korea Co., Ltd. #325 Daewoo The O Valley Bldg., 76, LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea KOREA (REPUBLIC OF) Contact: Soowoong Jeong Email: soowoong.jeong@sgs.com-new! Tel: 82 31 460 8060</p>	<p>Bureau Veritas CPS (Hong Kong) Ltd 1/F, Pacific Trade Centre, 2 Kai Hing Road, Kowloon Bay, Kowloon, Hong Kong Contact: Dr. Lee Siu Ming, Regional Manager Email: siuming.lee@hk.bureauveritas.com Tel : (852) 2331 0726</p>	<p>SGS-Taiwan SGS Taiwan Ltd. Multi Chemical Laboratory-Kaohsiung 61, Kai-Fa Rd, Nanzih Export Processing Zone Kaohsiung , Taiwan 81170 Contact: Janny Lin, Assistant Manager Marketing Email: janny.lin@sgs.com Tel: 886-7-3012121 ext.4102</p>	<p>SGS-Brasil SGS do Brasil Ltda, Av. Andrômeda, 832 – 2º floor Barueri - São Paulo SP, 06473-000 Brazil Contact: Patricia Hellmeister, SL SBU Manager Email: patricia.hellmeister@sgs.com-new! Tel: +55 11 3883 8894</p>
<p>SGS-Hong Kong SGS Hong Kong Ltd. 4/F On Wui Centre 25 Lok Yip Road, Fanling, NT Hong Kong Contact: Gamma Cheung Email: gamma.cheung@sgs.com Tel: (852) 2774 7449</p>	<p>SGS-Thailand SGS Thailand Ltd. 41/23 Soi Rama III 59 Rama III Road, Chongnonsee Yannawa, Bangkok 10120 Thailand. Contact: Bhuwadon Samlam Email: Bhuwadon.samlam@sgs.com-new! Tel: (66-02) 294.74.85-9</p>		<p>Bureau Veritas CPS (Germany) GmbH Wilhelm Hennemannstr. 8 19061 Schwerin Deutschland Contact: Dr. Joerg Ruhkamp, Laboratory Director Email: joerg.ruhkamp@de.bureauveritas.com Tel: 49 40 74041 1001</p>

**APPENDIX – PDR and PRSL: Nike Approved Packaging Test Laboratory Information**

<p>LABORATORY KEY</p> <p>Labs performing both Chemical and Performance Testing</p> <p>Labs performing only Performance Testing</p> <p>Labs performing only Chemical Testing</p>	<p>SGS Hong Kong Limited 1/F On Wui Centre 25 Lok Yip Road, Fanling, NT Hong Kong Contact: Birkoff Chen Phone: +852 2765 3561 (Ext. 1561) E-mail: birkoff.chen@sgs.com</p>	<p>Intertek India – Gurgaon 290, Udyog Vihar , Phase -II ,Gurgaon , Haryana-122016 India Tel: 91-124-4503400 Fax: 91-124-4503473 Contact: Ashwani Mishra Email: ashwani.mishra@intertek.com</p>	<p>SGS - North America, Inc. 291 Fairfield Avenue Fairfield, NJ USA 07004 Contact: Jason Sherrier Phone: +1-(973) 461-7918 E-mail: Jason.Sherrier@sgs.com</p>
<p>SGS-CSTC Standards Technical Services Co., Ltd. Shanghai 9#, No.69, KangQiao Industrial Park, Block 1159, Kangqiao East Road, Pudong district, Shanghai, China Attn: Windy Hua Phone: +86 (0)21 6115 2473 Contact: Sunny Zhang E-mail: Sunny-r.Zhang@sgs.com</p>	<p>Intertek China - Hong Kong Intertek Testing Services HK Ltd 10D Garment Centre, 576 Castle Peak Road Kowloon, Hong Kong Tel.: 852-2173-8705 Fax: (852) 2785 7998 Contact: Eleanor Chan E-mail : eleanor.chan@intertek.com</p>	<p>SGS Korea Address : 398-1, Gomae-dong, Giheung-gu, Yongin-si, Gyeonggi-do, 446-901, Republic of Korea Contact: Jung-ho Shim Phone : + 82 31 240 6601 E-mail : Simpson.shim@sgs.com</p>	<p>SGS – CSTC Standards Technical Services Co., Ltd. Shunde Hardgoods Lab 1st Floor, Building 10f European Industrial Park, No.1 Shunhenan Road ,Wusha Section, Daliang Town, Shunde of Foshan, Guangdong Province, China. 528333 Contact: Jack Yao Phone: + 86 (0)757 2280 5851 E-mail: jack.yao@sgs.com</p>
<p>SGS Taiwan Ltd 31, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City, Taiwan 24886 Contact: Terence Jer-Horng HSIEH Phone: 886 2 2299 3279 Ext. 3600 Mobile: 886 931173798 E-mail : terence.hsieh@sgs.com</p>	<p>SGS Vietnam Ltd. - HCMC Laboratory Lot III/21, 19/5A Street, Industrial Group III, Tan Binh Industrial Zone Tay Thanh Ward, Tan Phu District, Ho Chi Minh City, S.R. of Vietnam Contact: Ms Uyen Bui Phone: (84 8) 38160999 Ext. 106 Fax: (84 8) 38160996 E-mail : uyen.bui@sgs.com -new!</p>	<p>SGS-CSTC Standards Technical Services Co., Ltd. Tianjin SGS BUILDING No. 41, Kaitai Science & Technology Building, The 5th Avenue, TEDA, Tianjin, China Attn: Michael Wen Phone: +86 (022) 65288280 Fax: +86 (022) 65288352 Email: michael.wen@sgs.com - new!</p>	



APPENDIX – DESIGN REQUIREMENTS: Wood Packaging

Wood Packaging - Reference from Page 8

Finished and unfinished packaging items made of coniferous or non-coniferous wood must meet the following requirements for international shipment:

- Follow appropriate treatment requirements for country of importation/exportation.
- If wood is treated, mark it with the accepted international label indicating how the wood was treated.* (please contact Nike Global Packaging Services for the appropriate treatment marking requirement.)
- The shipment should be accompanied by documentation stating what type of wood is contained in shipment (e.g. coniferous, non-manufactured etc.).
- For countries that have not adopted ISPM15, the shipment should be accompanied by all relative Phytosanitary certifications of wood treatment since countries that have treatment requirements require documented proof.
- All wood packaging should be free of insects, and signs of damage produced by insects (i.e., free from grub holes larger than 3mm across).
- For countries that require treatment, recycled, remanufactured or repaired wood should be recertified and re marked. All components must be treated.

Wood that is suspected of or found to be infected by an unwanted organism will be treated and reshipped, or destroyed at the importer or agent's risk and expense. Wood shipments that are not treated appropriately, or shipments that do not have proper certifications risk being denied export or import.

ISPM 15 Standard for Wood Packaging and Approved Treatment Methods

International Standards for Phytosanitary Measures (ISPM15) for the treatment of wood packaging is regulated in 60+ countries, including the United States, Canada, Mexico, the EU Member States, and Korea.

Regulated wood packaging items subject to ISPM 15 requirements are as follows: Coniferous and non coniferous raw wood packaging material such as pallets, dunnage, crating, packing blocks, drums, cases, load boards, pallet collars, and skids.

ISPM Approved Treatment Methods

One of the below 2 treatment methods may be used to Meet ISPM 15 requirements. **Please note that some countries and jurisdictions also have additional and more specific requirements.** Please contact Nike Global Packaging Services for additional country specific information.

Heat Treatment (HT)

Wood packaging material should be heated in accordance with a time-temperature schedule that achieves a minimum wood core temperature of 56° C for a minimum of 30 minutes. Kiln drying (KD), chemical pressure impregnation (CPI), or other treatments may be considered heat treatments to the extent that they meet the HT time temperature specifications. For Example, CPI may meet the HT specification through the use of steam, hot water or dry heat.

Methyl Bromide (MB) Fumigation for Wood Packaging Material

All wood packaging materials should be fumigated with Methyl Bromide (per temperature and concentration levels laid out in legislation). The treatment is indicated by the mark MB. Legislative Reference: <http://www.ippc.int/>



APPENDIX - DESIGN REQUIREMENTS: Source Reduction

REQUIREMENT	REQUIREMENT DETAILS
<p>Source Reduction</p> <p>Based on CEN ER13428 http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/packaging/index_en.htm</p>	<p>The packaging developer must be able to demonstrate that the minimum adequate weight/volume of packaging has been used, i.e., that the packaging component cannot be further reduced without affecting the critical area(s). The critical areas require citation and documentation of studies or tests showing that these areas are critical for the product and limit the source reduction of the package. Please note that for compliance with Essential Requirements, merely substituting one material for another does not constitute source reduction.</p> <p>Note: In many cases, it is possible to justify the size of the packaging system and its components on marketing or consumer acceptance grounds unless competitors are successfully using less packaging (see critical areas below). Please note, however, that the concept of what is considered “excessive” may become more rigorous over time. Periodic review may be necessary as market conditions change. Independent of how competitors are packaging their products, packaging component and any complete packaging system must be justified on its own terms.</p> <p>The standard lists ten critical areas that may limit the ability to further reduce the component. For each critical area, there must be a test, study or specification that validates this limitation. The critical areas and examples of references are listed below. It is necessary to review the components individually and as part of the whole system, as reductions to one packaging component (e.g. a primary container) may necessitate the use of additional material elsewhere in the packaging system (e.g. cushioning or a sturdier shipper).</p>
Critical Area	Examples of Critical Area Reference
Product protection	Protection against vibration, impact, compression, humidity, light, oxygen, and microbiological contamination
Packaging manufacturing process	Shape of the container, thickness tolerances, size, tooling, specifications minimizing production waste
Packing/filling process	Impact and stress resistance, mechanical strength and stability, line speeds and efficiency, closing, headspace, hygiene
Logistics	Handling requirement, space utilization, palleting systems, and damage-resistance
Product presentation and marketing	Product identity, brand recognition, labeling, retail display system requirements, pilfer-resistance, and tamper indication
Consumer acceptance	Unit size, ergonomics, shelf life, dispensing methods, attractive presentation, and product utilization
Information	Instructions for use or storage, bar codes, pull date
Safety	Safe handling requirements, child-resistance, hazard warnings, pressure release closures
Legislation	Any requirements from national or international legislation or standardization
Other	Other economic, social or environmental implications not considered above that are relevant to weight or volume of packaging



APPENDIX – DESIGN REQUIREMENTS: Empty Space and Layering

REQUIREMENT	REQUIREMENT DETAILS	
Empty Space And Layering Limitations	Apparel textiles and socks	All sales packaging of apparel items have to meet two standards: (i) the package must have less than 10% empty space and, (ii) the package is not to exceed 1 layer of packaging.
	Toys	All sales packaging of toys has to meet two standards: (i) the package must have 10% or less empty space and, (ii) the package is not to exceed 2 layers.
	All Other Products	All other product sales packaging: (i) Should not exceed 25% empty space. (ii) Cologne, perfume, wallet and belt sales packaging should not exceed 2 layers.
Layering Limitations	Definition: “Number of layers of packaging (or layer limits)” refers to the number of distinct layers of packaging that envelop a product. For example, a bottle containing liquid constitutes the first layer of packaging; if the bottle is then held in a paperboard container, this constitutes the second layer of packaging. Based on South Korean law	
Empty Space	Definition: Headspace or other excess space within a package that is not taken up by the product at the time of sale. The amount of free space is regulated in Japan, New Zealand, South Korea, and Taiwan.	



APPENDIX – DESIGN REQUIREMENTS: Recoverability Requirements

REQUIREMENT	REQUIREMENT DETAILS
<p>Material Recovery (Recycling) & Energy Recovery (Incineration)</p> <p>Based on EN 13430</p>	<p>All suppliers must be able to certify that their packaging components meet at least one of three recovery routes: material recovery, energy recovery, or organic recovery in accordance with the EU Packaging Standards.</p> <p>Material Recovery (a.k.a. recycling)</p> <p>For components to meet the material recovery standard, the standard requires that a partner:</p> <ol style="list-style-type: none"> A. Ensure that plastic packaging components include the appropriate SPI resin identification codes. (Page 10) B. Identify whether there is an available infrastructure for recycling the component C. Identify what the available recovery stream will be for the component. At the present time: <ul style="list-style-type: none"> • Nike plastic packaging components including LDPE bags, rigid PET constituents, folding boxes, and expanded foam cushioning are not universally compatible with plastic recycling streams and are not available for material recovery/recycling. • Plastic shopping bags are recoverable in the plastic bag material stream in the limited areas where there are retail store recycling programs. • Polylactic Acid (PLA) is not available for material recovery and will act as a contaminant in the plastics recycling stream, therefore this is a Nike restricted material. • Corrugated boxes, paper and paperboard are generally recoverable, provided no containments are present that would impede recycling of these materials in the paperboard/corrugate recovery stream. Note, paper labels affixed to an object that is not made of paper will not be recovered. For example, a paper label affixed to a tin box will not be recovered in a tin recycling stream. • Most steel packaging and tin coated steel boxes will meet recovery requirements for steel and tin respectively. D. Identify the percent that is available for recycling (automatically calculated in the packaging technical file) <p>Note- Those involved in the design, development or conceptualization of packaging must determine if the total packaging system meets the recovery standards based on how the packaging components are combined in the final packaging system. In other words, based on how the components are assembled is it realistic to assume the package, as thrown away, will be recyclable. For example, any caps, label materials and adhesives attached to a container or box must be compatible with the recycling stream for the container, box etc. Additionally, the packaging must allow for effective emptying so that the package can be recycled. Furthermore, the design must enable packaging components made of different materials to be easily separated to ensure compatibility with recycling systems.</p> <p>Energy Recovery (i.e. incineration with energy recovery)</p> <p>For a component to meet the energy recovery route option, the component needs to have a net positive energy value as defined in EN 13431. Anything that is paper, plastic, wood, or organic will automatically meet the standard. This includes textile bags made of polymers and organic materials like cotton. Any component that is at least 50% paper, plastic, wood, or organic material will meet the standard. Packaging made entirely of steel, aluminum, tin and glass will not meet the standard and need to meet an alternative recovery route. However, thin gauge-aluminum that is 50 microns or less will meet the standard.</p>



APPENDIX – DESIGN REQUIREMENTS: Recoverability Requirements

REQUIREMENT	REQUIREMENT DETAILS																								
<p>Organic Recovery</p> <p>Based on EN 13430</p>	<p>Organic Recovery (a.k.a. composting)</p> <p>A. For a component to meet the organically recoverable standard they must meet the requirements of EN 13432 which defines specific conditions for material breakdown. To purchase a copy of this standard in English go to:</p> <p>http://www.sfs.fi/en/ OR http://www.bsonline.bsi-global.com/server/index.jsp</p> <p>To purchase a copy of the standard in a language other than English go to: http://www.cenorm.be/cenorm/standards_drafts/index.asp</p> <p>B. Additionally, (for organically recoverable components only) Nike requires that all packaging and packaging components that are organically recoverable limit the use of the elements below or any compounds containing them to the levels shown below as required in EN 13432.</p> <table data-bbox="386 711 942 1078"> <thead> <tr> <th colspan="2">Materials and mg/kg on dry Substance</th> </tr> </thead> <tbody> <tr><td>Arsenic</td><td>5.00</td></tr> <tr><td>Cadmium</td><td>0.50</td></tr> <tr><td>Chromium</td><td>50.00</td></tr> <tr><td>Copper</td><td>50.00</td></tr> <tr><td>Fluorine</td><td>100.00</td></tr> <tr><td>Mercury</td><td>0.50</td></tr> <tr><td>Molybdenum</td><td>1.00</td></tr> <tr><td>Nickel</td><td>25.00</td></tr> <tr><td>Lead</td><td>50.00</td></tr> <tr><td>Selenium</td><td>0.75</td></tr> <tr><td>Zinc</td><td>150.00</td></tr> </tbody> </table> <p>Suppliers must be capable of providing certifiable information regarding compliance with EN 13432 for components declared to be compostable. Should Nike request this information from a partner the partner must be able to provide the results to Nike within three (3) business days of the request.</p> <p>Note- Those involved in the design, development or conceptualization of packaging must determine if the total packaging system meets the recovery standards based on how the packaging components are combined in the final packaging system. In other words, based on the how packaging components are assembled, is it realistic that the package will be organically recoverable.</p>	Materials and mg/kg on dry Substance		Arsenic	5.00	Cadmium	0.50	Chromium	50.00	Copper	50.00	Fluorine	100.00	Mercury	0.50	Molybdenum	1.00	Nickel	25.00	Lead	50.00	Selenium	0.75	Zinc	150.00
Materials and mg/kg on dry Substance																									
Arsenic	5.00																								
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Copper	50.00																								
Fluorine	100.00																								
Mercury	0.50																								
Molybdenum	1.00																								
Nickel	25.00																								
Lead	50.00																								
Selenium	0.75																								
Zinc	150.00																								



APPENDIX: Impact of Packaging Design and Treatments on Plastic Recyclability

Packaging Type	Resin Type	Things to Consider	Impact on Recyclability
Plastic Containers (e.g. bottles, jars, any container with a neck)	PET	Color / Pigment	<p>Problems?</p> <p>Transparent colors other than green are generally not desirable. Translucent and opaque colors can contaminate PET bottle/container bales, specifically TiO2 (for bottle-to-bottle recycling). White opaque, non-TiO2 opaque/translucent PET bottles can be problematic in the recycling process.</p> <p>Recommendation</p> <ul style="list-style-type: none"> - Prioritize use of unpigmented PET (widest end-use applications for all containers), followed by green tinted (for bottles). Transparent light blue (bottles) can be successfully included in the clear and green stream. Inclusion of nucleating agents, hazing agents, fluorescers, and other additives should be examined by the reclaiming industry (e.g. APR's Champions for Change testing program).
	HDPE/PP		<p>Problems?</p> <p>Use of pigments makes HDPE (bottles specifically) harder to sort and separate from other plastic bottles. Use of pigments in PP bottles can limit potential post-recycling applications.</p> <p>Recommendation</p> <ul style="list-style-type: none"> - Use unpigmented, homopolymer HDPE (milk and water bottles) and PP for bottles. Avoid use of black (and other dark) colored containers.
	PET / HDPE/ PP	Closures / Closure Liners	<p>Problems?</p> <p>Closures made from PVC (any PVC attachment can contaminate PET systems), PS, steel and even aluminum (though tolerated), present problems in the separation process and should be avoided. Silicone polymer closure parts can present technical problems in the recycling process and in the quality of the recycled plastic.</p> <p>Recommendation</p> <ul style="list-style-type: none"> - Components made of different types of plastic than the base resin (especially ones with similar densities) should be easily removable by the end user or in the recycling process. For PET, PP closures are preferred for easier separation, while the most preferred materials for closure systems are PP, HDPE or LDPE (should be limited to less than 5% of total weight, unless they are the same material as the base resin). EVA closure liners in plastic closures are acceptable by reclaimers. Closure systems that have no liner or don't leave a residual ring after removal are preferred.



APPENDIX: Impact of Packaging Design and Treatments on Plastic Recyclability

Packaging Type	Resin Type	Things to Consider	Impact on Recyclability
Plastic Containers (e.g. bottles, jars, any container with a neck)	PET / HDPE/ PP (and all polymer)	Sleeves and Safety Seals	<p>Problems?</p> <p>Tamper-resistant/tamper-evident sleeves are not easily removable in separation processes and can act as contaminants if they don't completely detach (leave no remains). PVC sleeves are not desirable and foil sleeves that could leave remnants can act as contaminants.</p> <p>Recommendation</p> <p>- Sleeves and safety seals should be designed to be completely detached from the bottle/container in conventional separation systems. Shrink sleeves (instead of adhered labels) made of PE or PP are preferred. Components of different types of plastic than the base resin (especially ones with similar densities), should be easily removable by the end user or in the recycling process.</p>
	PET / HDPE/ PP (and all polymer)	Labels	<p>Problems?</p> <p>Paper labels act as contaminants due to fiber and adhesive carry-over, while metalized labels can also act as contaminants, burdening the separation process. In PET streams, PS labels can cause reprocessing and end-use problems and PVC labels can act as contaminants.</p> <p>Recommendation</p> <p>- Paper labels and PVC labels should be avoided. For PET containers, labels made from materials that float in water should be used (PP, OPP, PE), and inks/coatings/substrates that cause them to sink should be avoided (plastic labels with specific gravity less than 1.0 are preferred). Labels should easily separate from packaging, like shrink labels with perforations and no adhesives. They should also not delaminate in reclaiming wash systems. Full-body labels/sleeves should allow the resin to be identified in automatic (NIR) sorting equipment.</p>
	PET / HDPE/ PP (and all polymers)	Inks and Adhesives (and Direct Printing)	<p>Problems?</p> <p>Inks can bleed color when agitated in water and discolor unpigmented plastic in the reclamation process. "Hot melt" adhesives, which tend to not separate properly and cause problems in the reclamation process, act as contaminants.</p> <p>Recommendation</p> <p>- Use label inks that do not bleed. Avoid "hot melt" adhesives. Label adhesives should be water soluble or disperse at temperatures of 140° F - 180 °F. Avoid use of other types of adhesives and limit usage and surface area of adhesives to avoid contamination. Avoid direct printing that is not removable or stains the plastic.</p>

**APPENDIX: Impact of Packaging Design and Treatments on Plastic Recyclability**

Packaging Type	Resin Type	Things to Consider	Impact on Recyclability
Plastic Containers (e.g. bottles, jars, any container with a neck)	PET / HDPE/ PP (and all polymer)	Layers	Problems? Layers and coatings which differ from the base resin can greatly reduce the material's recyclability, limit resin yield, increase separation costs, and act as contaminants in the reclamation process Recommendation - Layers should be made from the same material as the base resin, unless they are compatible or easily separable in conventional recycling (HDPE and PP can handle less than 5% (total weight) EVOH layer, 2 HDPE can handle minimal MXD6 and other nylon-based layers, especially if separable within reclamation processes). Minimize use of any/all layers/coatings and avoid blends of polymers not compatible with recycling processes
	PET / HDPE/ PP (and all polymer)	Additives	Problems? Degradable additives can shorten the useful life of plastics and affect the technical performance of recycled resin. Additives (e.g. scavengers in PET) can discolor and/or haze recovered polymers. Additives (e.g. calcium carbonate, talc, other fillers) that alter the density to be greater than water can cause plastic to sink and not be recovered. Blends of multiple resins not compatible with recycling are difficult to sort and are very undesirable. Recommendation - Avoid degradable additives and any additives that can discolor the resin during reclamation. Avoid blends of multiple resins not compatible with recycling processes. Test any additives to ensure they don't negatively affect the recycling stream, reclamation process, look, and technical performance of recycled resins.
	PET / HDPE/ PP (and all polymers)	Non-Detachable Components	Problems? Non-detachable components made from a material other than the base resin of the primary component can affect separation during the reclamation process and potentially act as a contaminant. Recommendation - Non detachable components, including monomers, should be comprised of the same base resin as the primary component, be compatible with the recycling process of the primary packaging resin, or be easily separable.
	All polymers	Postconsumer Content	The use of postconsumer recycled content is encouraged in bottles and containers whenever possible.
	All polymers	Other (non-PET, HDPE, or PP) Resins for Bottles / Containers	PET, HDPE and PP have a more established infrastructure for the reclamation and recycling of bottles, jars and containers. Use of other resins for this type of packaging generally has a negative effect on the recycling stream.

**APPENDIX: Impact of Packaging Design and Treatments on Plastic Recyclability**

Packaging Type	Resin Type	Things to Consider	Impact on Recyclability
Plastic Films (e.g. wraps, bags, sacks)	Guidance Overview		<p>Plastic bag and film recovery has increased steadily over the past 8-10 years. A survey by Moore Recycling Associates shows that 72% - 74% of the U.S population has access to plastic film recycling via curbside collection or because they live within 10 miles of a drop-off facility (typically retail drop-off programs, which may be only for bags). Limited guidance is available for designing plastic films to be recyclable. However, plastic films need to have the following basic attributes to even be considered potentially recyclable:</p> <p>Material Composition Monolayer, single resin polyolefins are the most common films targeted by reclaimers for reprocessing. Reclaimers accept clean, dry plastic films that are not pigmented black and are comprised of one of the following: HDPE, MDPE, LDPE, and LLDPE (very limited to no take-back of PP). These materials are most compatible with existing recycling processes and in greatest demand by reclaimers.</p> <p>End-use Plastic film needs to be clean of any contaminants (food, oils, adhesives, paint) to not only be compatible with recycling processes, but to make collection of the material economically feasible.</p>
	HDPE	Overview and Examples	Unpigmented HDPE films: slight opacity, low stretch, prone to tear, and high strength Examples of potentially recyclable HDPE packaging: Majority of grocery bags, t-shirt bags, bags with sealed air used as protective packaging.
	MDPE	Overview and Examples	Unpigmented MDPE films: moderate clarity, poor strength and stretch characteristics Examples of potentially recyclable MDPE packaging: Wrap for consumer paper (e.g. toilet paper, paper towels).
	LDPE	Overview and Examples	Unpigmented LDPE films: high clarity, moderate strength and slight ability to stretch <i>Examples of potentially recyclable LDPE packaging:</i> Bags (e.g. thick newspaper bags, bread bags), bubble wrap (potentially difficult to recycle without local markets due to shipping limitations).
	LLDPE	Overview and Examples	Unpigmented LLDPE films: moderate clarity, tacky feel and ability to stretch Examples of potentially recyclable LLDPE packaging: Stretch wrap, bags (e.g. clear newspaper bags), dry cleaning film, agricultural films (can be rejected due to contamination concerns with contact of farm products and paint/residue used for UV protection).



APPENDIX: Impact of Packaging Design and Treatments on Paper Recyclability and Compostability

Packaging Type	Impact on Recyclability	Impact on Commercial/Industrial Compostability*
Multiple Components / Materials	<p>Problems? Materials/components which are incompatible with the paper recycling stream. Recommendation</p> <ul style="list-style-type: none"> - Avoid any combination of materials/components that cannot be easily separated or that are not compatible with the paper recycling stream. - Consider using all paperboard components instead of alternative materials. 	<p>Problems? Non-compostable materials/components that cannot be separated. Recommendation</p> <ul style="list-style-type: none"> - Avoid any combination of materials that cannot be easily separated by the consumer in anticipation of composting or ensure all component materials can be composted together.
Inks, Overprint Varnishes	<p>Problems? Some types of inks are more difficult than others to deink, which can cause finished recycled content paper to contain unwanted specks of off-color material. For example, UV and water-based inks can be more difficult to deink than oil or solvent-based inks. However, oil or solvent based inks emit higher amounts of volatile organic compounds (VOC's) than UV and water-based inks; however, some vegetable oil-based inks have lower VOC content than petroleum-based inks. Recommendations</p> <ul style="list-style-type: none"> - Minimize or avoid the use of metallic and fluorescent/neon colors (their ability to be deinked is not completely understood). - Minimize the overall amount of ink used. 	<p>Problems? Typically not a problem since they don't make up a significant constituent of the package (usually less than 1%). Recommendation</p> <ul style="list-style-type: none"> - Ensure inks meet applicable heavy metals limits since this can impact the paper's acceptability for composting.
Adhesives (including water-based, hot-melt, pressure-sensitive, and cold seal adhesives)	<p>Problems? Adhesives are generally considered contaminants by recyclers because they can cause operational problems such as build up ("stickies") on equipment, requiring frequent cleaning. They can also cause quality issues with the finished product such as thin areas, holes and increased dirt count (i.e. concentrated in spots of ink). Recommendations</p> <ul style="list-style-type: none"> - Adhesives should be minimized or avoided. Consider other design options such as interlocking tabs or printing information directly on packaging instead of using a label. - If adhesives are required, consider adhesive options: <ul style="list-style-type: none"> - Hydrophobic adhesives are considered easier to separate from pulp than water-based adhesives. - If using pressure-sensitive adhesives, only use "recycling compatible" pressure-sensitive adhesives. 	<p>Problems? Packaging with adhesives needs to meet applicable compostability standards. Recommendation</p> <ul style="list-style-type: none"> - Ensure item can meet applicable compostability standards.



APPENDIX: Impact of Packaging Design and Treatments on Paper Recyclability and Compostability

Packaging Type	Impact on Recyclability	Impact on Commercial/Industrial Compostability*
Polymer Coatings (e.g. polyethylene)	<p>Problems? Polymer coatings can make it harder to separate the fiber in the re-pulping process.</p> <p>Recommendation - Minimize the amount of coating to make it easier to separate the fiber in the re-pulping process.</p>	<p>Problems? Packaging coated with a compostable biopolymer might be acceptable; those coated with traditional polymers (e.g. polyethylene) typically are not.</p> <p>Recommendation - Use compostable biopolymer coatings that meet applicable requirements.</p>
Dyes	<p>Problems? Some dye colors can cause finished recycled content paper to contain unwanted specks of off-color material.</p> <p>Recommendation Use of dark, black and fluorescent/neon colors should be minimized or avoided.</p>	Typically not a problem.
Waxes	<p>Problems? Considered a contaminant and not recyclable. Wax can cause operational problems such as clogging machinery. It can also result in quality problems in finished paper by forming “stickies” that cause discolored spots or paper breaks.</p> <p>Recommendation - Waxes should be avoided. Consider using an alternative that meets the Fibre Box Association and the Corrugated Packaging Alliance wax alternative standard. See http://www.corrugated.org/wax-alternatives</p>	Typically not a problem.
Foil and Metalized Paper (aluminum directly deposited onto paper, laminated, or stamped)	<p>Problems? Needs to be removed from the pulp because it is considered a contaminant by many recyclers for cosmetic reasons. Metallic particles can cause finished recycled content paper to contain unwanted specks of off-color material. If the aluminum is applied to paper with adhesives, the adhesives can also cause unwanted spots in the finished paper. Metallic particles can cause operational problems as well, such as clogging mill equipment.</p> <p>Recommendation - Avoid, if possible, or limit the use of foil and metalized paperboard.</p>	<p>Problems? Composters prefer to avoid metalized packaging. Metallic particles can appear in finished compost, causing aesthetic problems. If metalized film is used, it may leave pieces of plastic in finished compost.</p> <p>Recommendation - Avoid the use of metalized foil and paper.</p>



APPENDIX: Impact of Packaging Design and Treatments on Paper Recyclability and Compostability

Packaging Type	Impact on Recyclability	Impact on Commercial/Industrial Compostability*
<p>Multi-Laminate Carton (fiber-based package with layers of LDPE and aluminum)</p>	<p>Problems? It is difficult to separate out the fiber layer from the other layers. There is a lack of widely available recycling facilities for these types of cartons in the U.S.</p> <p>Recommendation - Determine if other types of materials might be suitable, such as PET or steel.</p>	<p>Problems? Not compostable if made with traditional polymers.</p> <p>Recommendation - Determine if other types of compostable materials can be used.</p>
<p>Non-Traditional Fiber (bamboo, hemp, kenaf, palm fiber, straw from rice and wheat, sugarcane (bagasse))</p>	<p>Problems? Since these fibers make a small percentage of paper packaging, there is a lack of information on their recyclability. Further studies are needed to understand how they impact the wood-fiber recycling stream</p> <p>Recommendation - More information is needed to understand the recyclability of non-traditional fibers. Absent better information, it is suggested to apply the same design and treatment recommendations as for wood-fiber based packaging.</p>	<p>Problems? Packaging made from non-wood fibers can usually be composted like wood-fiber packaging.</p> <p>Recommendation Apply the same design and treatment recommendations as for wood-fiber based packaging. Ensure item can meet applicable compostability standards.</p>

Table prepared by Environmental Packaging International (EPI) as part of Nike's Global Environmental Packaging Reference Guide Appendix v1.9



APPENDIX: Packaging Performance Standard Test Method Guidance

This section is intended to serve as a reference for Industry Standard Performance Test Methods for finished packaging and packaging substrates. This section includes a brief overview of common industry standard packaging performance test methods, in addition to examples of the finished packaging components and packaging materials to which each of these test methods apply. These test methods shall serve as **packaging performance testing guidance only, and therefore are not mandatory Nike Inc. testing requirements.** However, where packaging performance testing is requested, Nike will only accept results relevant to those test methods listed below. Additionally, where packaging performance testing is requested, Nike will only accept results from [Nike Inc. approved laboratories](#) (Pages 12-13 of this document).

If packaging performance testing is determined to be necessary by Nike Inc., the requesting product or packaging developer and/or procurement team member will, in conjunction with Nike Global Packaging Procurement as requested, be responsible for assessing test results and providing final approvals based on performance expectations defined by the developing team.

If you have any questions about this section or the test method guidance provided, please contact your applicable Nike Inc. representative.

Test Description	Materials Covered *not limited to the list below	Applicable Test Methods	Comments
Compression Strength Test (Box Crush Text)	Shoeboxes, clamshells, retail gift boxes, and corrugated shipping cartons (assembled, empty or loaded)	<u>TAPPI T-804:</u> Compression Test of Fiber Board Shipping Containers <u>ASTM D-642:</u> Standard Method For Determining Compressive Resistance of Shipping Container Components of Unit Loads	Used to measure the maximum external compressive forces that an empty container or loaded container can withstand in a dynamic compression testing environment.
Compression Strength (Constant Compressive Load tests)	Shoeboxes, clamshells, retail gift boxes, specialty boxes, and corrugated shipping cartons (*assembled, empty and loaded)	<u>ASTM D-7030:</u> Test Method for Short Term Creep Performance of Corrugated Fiberboard Containers Under Constant Load Using a Compression Test Machine. <u>ASTM D-4577:</u> Test Method for Compression Resistance of a Container Under Constant Load	Used to determine the resistance of empty or loaded containers and empty or loaded unitized configurations, to a vertically applied constant compressive load for either a specified time or to failure.
Tensile Test for Paper Materials	Paper and paperboard materials	<u>TAPPI T-494:</u> Tensile Properties of Paper and Paperboard using constant rate of elongation apparatus	This test measures 4 tensile breaking properties for paper and paperboard using a constant rate of elongation testing apparatus. 4 tensile breaking properties are as follows: Tensile Strength, stretch, tensile energy absorption and tensile stiffness.

**APPENDIX: Packaging Performance Standard Test Method Guidance**

Test Description	Materials Covered *not limited to the list below	Applicable Test Methods	Comments
<p>Shock and Impact Tests</p> <p>* These tests are used to determine the effectiveness of packaging and related cushioning to isolate the retail product from impact and shock. These tests are also used to evaluate impacts and damage to retail facing packaging. These tests should be performed using finished packaging and product that replicates the intended final packaging system</p>	<p>Single loaded containers (eg: Shoebox) and loaded shipping cartons (eg: Loaded MOC's)</p>	<p>TAPPI T-802: Drop Test for Fiberboard Shipping Containers</p> <p>ASTM D-5276: Standard Test Method for Drop Test for Loaded Containers by Free Fall</p> <p>ASTM D-880: Test Method for Impact Testing for Shipping Containers and Systems</p> <p>ASTM D-5487: Standard Test Method for Simulated Drop of Loaded Containers by Shock Machine</p>	<p>Used to measure the ability of a loaded container or loaded unitized configuration to withstand impacts by free fall drop or simulated impacts/shocks. Also used to measure the ability of the loaded container to protect the product and retail facing packaging.</p>
	<p>Packaging and product that replicates the intended final packaging system</p>	<p>ASTM D-6344: Standard Test Method for Concentrated Impacts to Transport Packages</p>	<p>Used to measure the package's ability to withstand the force of concentrated impacts from external sources such as adjacent freight during transport, conveyor systems, and chutes. This test is ideal for, but not limited to, thin fluted containers such as shoeboxes.</p>
		<p>ASTM D-4003B: Standard Method for Programmable Horizontal Impact Test for Shipping Containers and Systems</p> <p>ASTM D-5277: Test Method for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester</p>	<p>Used to measure the ability of a loaded container or loaded unitized configuration to withstand horizontal impacts.</p>



APPENDIX: Packaging Performance Standard Test Method Guidance

Test Description	Materials Covered *not limited to the list below	Applicable Test Methods	Comments
Vibration Tests	Single loaded containers (eg: Shoebox) and loaded shipping cartons (eg: Loaded MOC's)	ASTM D-999: Standard Test Method for Vibration Testing of Shipping Containers ASTM D-5112: Standard Test Method for Random Vibration Testing of Shipping Containers	These tests are used to determine container fractures, loose wires, screw caps, container surface abrasion etc. These tests should be performed using finished packaging and product that replicates the intended final packaging system.
Burst Strength Tests for Corrugated Material and Fiberboard	Packaging materials made of corrugated fiberboard, solid fiber board, and paperboard (utilized for shoeboxes, clamshells, retail gift boxes, Specialty boxes, and corrugated cartons)	TAPPI T-810: Bursting Strength of Corrugated and Solid Fiberboard TAPPI T-807: Bursting Strength of Paperboard and Linerboard	These tests are used to measure the substrate's resistance to internal rupture from compression.
Puncture Resistance Test for Corrugated Material	Corrugated Fiberboard Material	TAPPI T-803: Puncture Test of Containerboard	This test measures the energy required to puncture corrugated board in order to assess the protective qualities of a given board combination.
Edge Crush Tests for Corrugated Material (ECT)	Corrugated Fiberboard Material	TAPPI T-811: Edgewise Compressive Strength of Corrugated Fiberboard TAPPI T-838: Neck down Method TAPPI T-839: Clamp Method TAPPI T-841: Morris Method	These tests measure the ability of corrugated board to sustain a top to bottom load.
Textile Colorfastness to Crocking	All natural and synthetic Textile and Leather Packaging Components	AATCC 8-2007: Test Method for colorfastness to crocking; AATCC Crock Meter Method	This test method determines the amount of color transfer from the surface of textiles to other surfaces by rubbing. This test method does not apply to any packaging components other than those made of textile materials

**APPENDIX: Packaging Performance Standard Test Method Guidance**

Test Description	Materials Covered *not limited to the list below	Applicable Test Methods	Comments
Flat Crush Test for Corrugated Material	Corrugated Fiberboard Material	<p>TAPPI T-808: Flat Crush Test of Corrugated board(Flexible beam method)</p> <p>TAPPI T-825: Flat Crush Test of Corrugated Board (Rigid Support Method)</p> <p>TAPPI T-809: Flat Crush Test of Corrugating Medium (CMT test)</p>	These tests measure the resistance of flutes in corrugated board to force applied perpendicular to the board under prescribed conditions
Tearing Tests for Paper Materials	All non-corrugated paper based materials	<p>TAPPI T-414: <u>Internal tearing resistance of paper (Elmendorf Method)</u></p> <p>TAPPI T-470: <u>Tearing Resistance of Paper (Finch Method)</u></p>	<p>Internal tear resistance measures the work required to tear a paper sample to a specified distance once the tear has been established.</p> <p>Edge tearing resistance measures the work required to tear a paper sample by initiating the tear at the edge of the sheet.</p>
Scuff Resistance Test	All Paper based Printed Packaging	<p>TAPPI UM-580: Scuffing resistance of Linerboard</p> <p>TAPPI T-830: Ink Rub Test of Containerboard</p> <p>ASTM D-5264: Standard Test Method for Abrasion Resistance of Printed Materials/Sutherland Rub Tester</p>	These tests measure the ability of printed linerboard, printed container board and printed paperboard to resist abrasion and ink rub.
Hanger Performance Testing	Hangers	<p>For Nike’s hanger specifications and performance requirements, please go to: http://www.gs1us.org/industries/apparel-general-merchandise</p>	Nike’s hanger program adheres to GS-1 hanger standards. Compliance with these standards is a <u>Nike requirement</u> .



APPENDIX: DEFINITIONS

Term	Technical definition	Source	Basic Definition and/or Examples
<u>Active Packaging</u>	Any type of moisture and/or odor absorbing additive or microbial emitting additive, intended to minimize or eliminate the presence of moisture, odor, and the presence of certain chemicals.		Sachets, (Silica Gel packs, ethanol emitting sachets), film composites, antimicrobial films, odor absorbent films, moisture absorbing labels and patches, microbial emitting labels and patches.
<u>Empty Space Requirements and Layering</u>	<p>The Korean Empty Space Requirement sets a limit on the amount of empty packaging space that a consumer package can have.</p> <p>The Korean layering regulation sets a limit on the number of layers a consumer product packaging can have.</p>	Korean Ministry of Environment Notice, April 2003, Decree No. 137 Ordinance of the Standards for Methods and Materials, Etc. of Product Packaging	<p>Empty Space Requirements:</p> <p>Packaging space ratio refers to the ratio of packaging space capacity to packaging capacity. The interior volume of the package container is used to determine the Package Capacity. If the thickness of the packaging container is in excess of 10mm, the excess shall be included as Packaging Capacity. Package Space Capacity is the capacity remaining after subtracting Product Volume and Required Space Volume from the Package capacity. Product Volume is the volume of the smallest cube that surrounds the product. Required Space Volume is the space required to protect or fasten the product. The Package Space Ratio is the summation of the space ratio for both the first and second layers of packaging.</p> <p>The Packaging Space Ratio should be calculated to one-tenth of a percent.</p> <p>Example: In a gift pack the total volume of the outer package may not exceed the size of its contents by more than 25%</p> <p>Layering:</p> <p>This refers to the number of distinct layers of packaging that envelope a product. For example a watch in a plastic clamshell constitutes the first layer of packaging. If the watch is then held in a paperboard container, this constitutes the second layer.</p>



APPENDIX: DEFINITIONS

Term	Technical definition
<u>Forest Stewardship Council (FSC)</u>	FSC is an international non-profit organization founded in 1993 to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests. The FSC certification ensures fibers originate from well-managed forests.
<u>Functional Unit</u>	A set of components that will get thrown away together and will not be separated (e.g. a polybag with a paper label is a functional unit.) that will be placed in the same material recycling stream (which in this example would be plastics.)
<u>Material Safety Data sheet (MSDS)</u>	See Safety Data Sheet
<u>Old Growth Forests</u>	An uncut, natural forest that has been subjected to very little human-caused disturbances, and is characterized by 1) multi-canopy layers of forest cover that promotes the development of rich and varied habitat, 2) living trees of varying ages and sizes, as well as dead standing trees, downed logs, and coarse woody debris, 3) a developed understory, and 4) large dominant trees within the stand averaging at least 200 years of age in relatively contiguous stands of at least 100 acres in extent. While the age of the dominant trees in an old-growth forest can range from 60 years for aspen trees in the Upper Lake States to several hundred years for Douglas Firs in the Pacific Northwest to several thousand-year-old Bristlecone Pines, Nike's area of concern is for old growth forests with a minimum age of approximately 200 years.



APPENDIX: DEFINITIONS

Term	Technical definition	Source	Basic Definition and/or Examples
<p><u>Packaging</u></p>	<p>'Packaging' shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. 'Non-returnable' items used for the same purposes shall also be considered to constitute packaging.</p> <p>'Packaging' consists only of:</p> <p>(a) sales packaging or primary packaging, i.e. packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase;</p> <p>(b) grouped packaging or secondary packaging, i.e. packaging conceived so as to constitute at the point of purchase a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics;</p> <p>(c) transport packaging or tertiary packaging, i.e. packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packaging in order to prevent physical handling and transport damage. Transport packaging does not include road, rail, ship and air containers".</p>	<p>Packaging and Packaging Waste Directive 94/62/EC (as amended by 2004/12/EC) and the CONEG model legislation</p>	<p>Material used for protecting, transporting, and presenting products. This includes material used at every stage of the supply chain (manufacturing through retail).</p> <p>Packaging examples include, but are not limited to:</p> <ul style="list-style-type: none"> • Hangtags • Shoeboxes • Swift Tacks • Clamshells • Labels (UPC, case lot and carton) • Hangers (depending on use) • Retail, Gift, and Specialty Boxes • Footforms • Bags (depending on use) • Plastic wrapping • Belly Bands • Dunnage/Fillers • Coatings/Dyes/Pigments./Inks • Glues/Adhesives • Desiccants/Active Packaging • Corrugated Cartons • Shipping Pallets • Slip Sheets • Tissue Papers • Toe Stuffing • Size Strips • Insert Cards • Brochures • Tape • Stickers • Headers Cards • Interior/Exterior Blocking or Bracing Items • Exterior Strapping • Closures • Packaging Stabilizers/Additives
<p><u>Packaging component</u> (this definition is not applicable to heavy metals)</p>	<p>"Any part of packaging that can be separated by hand or by using simple physical means."</p>	<p>The CEN/TR 13695-2: 2004 report on Packaging</p>	<p>All pieces of the packaging that can be taken apart by hand or with simple tools.</p>



APPENDIX: DEFINITIONS

Term	Technical definition	Source	Basic Definition and/or Examples
<u>Packaging Constituent</u>	“the smallest part from which packaging or its components are made and which cannot be separated by hand or by using simple physical means”	CEN/TR 13695-2: 2004	<p>The pieces of the packaging that cannot be taken apart by hand or simple tools. The packaging components are made up of the constituents.</p> <ol style="list-style-type: none"> 1. For the component “shoebox” constituents would be fiber; filler; printing ink; glue; 2. For the component “printed label” constituents would be – unprinted label; printing ink; solvents.
<u>Recycled Content:</u> Total	Total Recycled Content is the combination of Pre and Post Consumer material. Industrial Scrap is not included in the definition.		
<u>Recycled Content:</u> Post-consumer	Materials generated by consumer, business, or institutional sources that have served their intended use or completed their lifecycle and would be destined for disposal had they not been diverted from the waste stream for reuse or recycling.		Used polypropylene bottles recycled, pelletized and used in the manufacturing of fleece garments.
<u>Recycled Content:</u> Pre-consumer	Materials and manufacturing by-products directed towards reuse or recycling rather than the waste stream. Pre-consumer material does not include materials and by-products generated by and reused in the original manufacturing process (see Industrial Scrap).		<p>Sawdust sold by a lumberyard to a fiberboard manufacturer.</p> <p>Paper trimmings left over during manufacturing that are sold to another manufacturer for use in their paper products.</p>
<u>Recycled Content:</u> Industrial Scrap	Materials and manufacturing by-products reused within a company's original manufacturing process.		Paper trimmings or waste at a paper mill as a result of the paper manufacturing process that are then redirected back to the beginning of the manufacturing process, rather than being disposed of or diverted to another company. In most jurisdictions, this material is not considered recycled material; therefore Nike Inc. will not consider this recycled material.



APPENDIX: DEFINITIONS

Term	Technical definition	Source	Basic Definition and/or Examples
<u>Recoverability:</u> Energy Recovery	Conversion of waste to energy, generally through the combustion of processed or raw refuse.	EN 13431:2004	By regulation, packaging containing at least 50% (by weight) organic material (i.e. wood, cardboard, paper and other organic fibers, starch or plastics) meets the energy standard. However, a packaging component comprised of less than 50% organic material will meet the energy standard if it has a calorific gain of at least 5MJ/Kg.
<u>Recoverability:</u> Material Recovery	A process of waste handling that separates from the waste stream reusable and recyclable materials such as plastics, metals, glass and certain grades of paper for the purpose of beneficial reuse.	EN 13430:2004	The “unit of recovery” must be made of a single material or a material combination that is recyclable in known, relevant and industrially available recycling systems. The packaging must allow for effective emptying so that the package can be recycled. The design must enable packaging components made of different materials to be easily separated to ensure compatibility with recycling systems.
<u>Recoverability:</u> Organic Recovery	The recovery of the organic content of packaging materials by aerobic composting or anaerobic bio gasification.	EN 13432:2000	The packaging material must break down under defined conditions, and the resultant compost must meet the quality standards for subsequent use.
<u>Safety Data Sheet</u>	Documentation detailing specific information relating to dangerous preparations	Directive 91/155/EEC	The safety data sheet should contain the following obligatory headings: 1. identification of the substance/preparation and of the company/undertaking; 2. composition/information on ingredients; 3. hazards identification; 4. first-aid measures; 5. fire-fighting measures; 6. accidental release measures; 7. handling and storage; 8. exposure controls/personal protection; 9. physical and chemical properties; 10. stability and reactivity; 11. toxicological information; 12. ecological information; 13. disposal considerations; 14. transport information; 15. regulatory information; 16. Other information.



APPENDIX: DEFINITIONS

Term	Technical definition	Source	Basic Definition and/or Examples
<u>SPI</u>	Society of the Plastics Industry		http://www.plasticsindustry.org/
<u>Required test reporting threshold</u>	Refers to the level of accuracy of the test. A test must be able to report to the level of accuracy indicated. For examples, if the threshold is 1ppm, the test must be able to detect at least 1ppm of the substance.		



APPENDIX: FREQUENTLY ASKED QUESTIONS

DEVELOPMENT AND COMPLIANCE

1. How were the substances and requirements selected for the PDR?

Global legislation is constantly being researched and tracked as it applies to Nike packaging. The PDR strives to incorporate the highest legislative standards as well voluntarily managing substance level that may not be legislated but have been identified as hazardous to the worker, consumer, or the environment.

2. Why has Nike set a non-detect limit for PVC in packaging?

Nike considered a broad range of scientific information from its own consultants, industry sources, government agencies and independent monitoring groups. Many of these findings indicate that PVC may pose a risk of harm to living systems, particularly if it is manufactured or disposed of improperly. Based on this information, Nike's corporate policy is to ban the use of PVC.

3. How were the test methods selected?

Some methods were legislated. Others were chosen based on global laboratory surveys and anticipated performance and reliability.

4. How often will this document be updated?

Our target is to update the PDR every year. However, please note that as legal or consumer requirements develop and change, the standards themselves will develop and will be continually updated. We are committed to working with our contract factories and suppliers to give them as much advance warning as possible of any new requirements to be incorporated into these standards. Please note that all suppliers are responsible for regulatory adherence independent of a release of the PDR.

5. How quickly will suppliers be expected to comply with new or updated Nike requirements?

Nike Inc. suppliers are expected to fully comply with Nike specific requirements upon receipt of the current version of PDR (Design Requirements, initial released December 1, 2005 in the PRSL) or from the first date of obligation under the applicable regulations, whichever is earlier.

DATA MANAGEMENT

1. Why does Nike require that each Partner retain all relevant supporting documents that demonstrate compliance to our standards for ten years?

It is conceivable that a packaging item can be in the market place for several years before it is tested by a non-profit organization, governmental agency, consumer group or retailer. In addition, many local laws and jurisdictions require this documentation to be retained and produced upon request. Applicable fees and taxes are based on technical information; therefore, these files become part of the financial record which may have jurisdictional retention up to ten years.

2. Can I see data from other companies?

No. All data is proprietary to each company. Trend analysis may be available (generic – no vendor information will be shared).



APPENDIX: FREQUENTLY ASKED QUESTIONS

PRODUCTION AND PERFORMANCE

1. *If we can't use these designs, will Nike provide a list of acceptable alternatives?*

Wherever possible, Nike will provide information on alternative materials and designs. However, suppliers should not expect that Nike will be able to provide alternatives and should work directly with their upstream suppliers.

2. *What if performance suffers with exclusion of these substances and adherence to these design requirements?*

We fully expect packaging materials to meet Nike requirements for performance and substance content. If a partner suspects a performance issue, they must contact their appropriate Nike contact.

3. *What if the price increases with use of approved alternatives?*

Nike expects all packaging products to remain cost-competitive. Again, if a contract factory or vendor anticipates a cost issue, they must contact their appropriate Nike contact.

LEGAL AND FINANCIAL OBLIGATIONS

1. *Who pays for testing?*

Nike will pay for the testing that we choose to conduct for benchmarking or verification purposes. Nike suppliers pay for all other testing to ensure compliance with Nike's Packaging Design Requirements.

2. *What if we fail to meet the PDR requirements? What are our legal and financial obligations?*

Nike's product health and safety standards, including the Packaging Design Requirements, are incorporated into Nike's specifications. Failure to comply with these requirements/specifications will be breaches of our agreements and may lead to legal and financial consequences to the manufacturers in accordance with those agreements.

3. *What happens if the packaging fails the required PDR chemical tests or performance tests? Who is responsible financially and for any delays, the packaging supplier or the contract factory?*

The contract factory is ultimately responsible for the consequences of any production delay as well as for any financial implications from the delay. Contract factories must proactively request the required test reports from all packaging suppliers (or do the tests themselves) so that if any issues are found, they can be corrected prior to the use of the packaging. Contact your Nike representative immediately if a testing failure occurs.

4. *Who is financially responsible for product recalls if they are required?*

The ultimate financial responsibility will depend upon the nature of the breach (violation), the party responsible for the breach, and other circumstances which will need to be evaluated on a case-by-case basis.



APPENDIX: FREQUENTLY ASKED QUESTIONS

LABORATORIES AND TESTING

1. If the packaging suppliers are willing to provide the contract factories with certificates that their packaging meets Nike PDR, do the contract factories still have to test the packaging?

The contract factory should perform testing so that if any issues are found, they can be corrected prior to use of the packaging. The contract factory is ultimately responsible for the consequences of any production delay as well as for any financial implications from the delay.

2. If individual components of packaging all pass the PDR requirements by themselves, is it possible that the combination of items on the packaging system could create a failure?

It would be unlikely that the packaging system would fail if all the components of the packaging meet design standards. If this happens, there may be several reasons:

- Components are prepared or analyzed differently than the complete packaging unit.
- There are differences in components and final packaging unit contents.

However, if all components of a packaging system met design requirement the packaging system could still create a failure (e.g. a component could impede recoverability of the system or together components could create a system that is too large for the product which could cause the system to fail to meet source reduction requirements).

3. Does Nike require testing? If so, how often?

Nike is not currently requiring suppliers to follow specific testing schedules for packaging, however Nike expects all parties to conduct testing on any given component at a minimum of every 2 years to ensure that they comply with these standards. Nike requires that each party retain all relevant supporting documents that demonstrate compliance to our standards for at least ten years and make them available for inspection as requested.

4. Will Nike also be testing and, if so, would they be willing to share the testing data they find?

Nike will perform benchmark and random production testing. We would be willing to share a supplier's test results with that supplier. Suppliers should not rely on Nike for testing to ensure compliance. We view this as a vendor's responsibility. Note that Nike will be testing at the end of the process when corrective action may be very costly. Suppliers should be aware of their packaging compliance prior to products being shipped to distribution centers.

5. Where do I send my packaging material for testing?

Please refer to the list of labs in pages 12 and 13 of this document.

6. How much material or product do I need to send to the labs for testing?

This will vary with the tests performed. The approved laboratories will provide this information.

7. Why do I need to use a Nike approved laboratory?

In an effort to increase data reliability, Nike has audited laboratories to evaluate their ability and capacity to perform testing. Because testing and reporting accuracy is so critical, Nike will only accept results from those laboratories that have demonstrated a strong quality assurance program and the ability to test against required methods. A partner may request that a local laboratory be added to the Nike approved list. These requests will be addressed on a case-by-case basis. Approval of a partner's local laboratory may require a laboratory audit. The cost of this would be passed on to the partner.



APPENDIX: FREQUENTLY ASKED QUESTIONS

8. How long will it take to have my packaging materials tested?

This will vary with test packages and workload within the laboratory. Typical laboratory turnaround is several days for the simpler analyses and 2-3 weeks for the more labor-intensive analyses.

9. At what point in the development and production cycle should I be testing my packaging?

Testing should be performed on packaging early enough in the cycle to ensure compliance of all packaging used to ship products to the marketplace, but late enough in the development cycle that component materials are consistent with final design.

10. Will data from other laboratories be accepted as proof?

No. Due to reliability issues, it is unlikely we will accept data from non-approved laboratories.

11. Will alternative methods be accepted as proof of compliance?

No. Again, due to reliability and comparability issues, it is unlikely Nike will accept data from alternative methods.

12. Am I allowed to use my in-house testing facility?

Nike only approves testing results from Nike approved labs. Lab locations and contact information may be found on Page 12-13 of this document.

13. Can Nike certify my in-house testing facility?

An audit can be requested and paid for by the supplier. Approval of the in-house laboratory is not guaranteed by this audit.

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