ESCIMS
Excise Supply Chain Information Management System

DEPARTMENT OF EXCISE, ENTERTAINMENT AND LUXURY TAX, GOVERNMENT OF NCT, DELHI

Standard Operating Procedure
For
Distillery-Brewery-Winery

ESCIMS

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1. Introduction

Delhi Excise Department, Government of National Capital Territory of Delhi proposes to initiate 'Excise Supply Chain Information Management System' (referred as ESCIMS throughout the document) in order to automate and regulate liquor sale in Delhi. The objective of ESCIMS is to make the system more transparent, efficient, effective and accountable with the help of Information & Communication Technology (ICT). The project covers the Excise services at Department and Corporations, Bonded Warehouses, Vends and Distilleries. The system shall prevent any leakage and provide real time information to the excise department. The system should enable the department to track the source of the each bottle that is sold at the vends in Delhi.

ESCIMS shall work on GS1 compliance barcodes placed at case and bottle level. These barcodes will be generated and printed on case/bottle by liquor manufacturing distillery as per the specifications recommended.

The objective of this document is to indicate relevant technology and process details for implementation of the bar code mechanism in the manufacturing process. It needs to be highlighted and understood by all stakeholders that if the bar code is not found readable due to transit damages, poor quality of printing, paper, pasting, etc., suitable penal action will be taken.

1.1 Objectives of ESCIMS

The Delhi Excise Department has envisaged to meet the following objectives through ESCIMS solution:

- To enforce and regulate liquor trade in Delhi without promoting it
- To mobilize revenue generation under the multiple heads of taxation that it administers.
- Track and Trace of each bottles and cases from Distillery to Bonded Warehouse and from Bonded Warehouse to Vends.

1.2 Benefits from ESCIMS

The benefits expected out of implementing the ESCIMS solutions are:

- Reduction in smuggling and brand pushing of liquor which help in better revenue mobilization.
- Automation of the issue of Transport Permits, import permits, No Objection Certificates will obviate the necessity of people coming to department.
- Generation of timely, intelligent reports and comparisons will help managerial control, Inventory management, improve efficiency and enable revenue record reconciliation on daily basis. Also bringing departments float to zero simultaneously. This will also help flattening of tax cycle.
- Ease of tax rates or regulatory changes being put in force immediately and also providing transparency to department and its business with its clients.

1.3 Outcomes from ESCIMS

The outcomes expected out of ESCIMS are:

- Assessment of Excise duty to be paid/ paid in real time
- Online MIS system for prompt and efficient decision making
- Online availability of Allocation, Sales and Payments related information
- Transport of Liquor within defined service levels
- Ease of payment of fees for Vend owner.
- An effective grievance redressal mechanism by providing a Helpline/ Call Center function with single seat in 2 shifts
- Online status tracking and enquiry facility

- Ensuring the genuine and correct amount of liquor reach the citizen.

1.4 Implementation Agency

Tata Consultancy Services (TCS) has been selected as Implementation agency (IA) for ESCIMS. The Implementation Agency is responsible for full system Integration of all Excise Department functional areas. Procurement, Installation and commissioning of hardware & software, application development, operation and maintenance support all comes under the scope of TCS. **The scope excludes provision of infrastructure and application capabilities to distilleries.**

Thus the need to make distilleries ready for the proposed system before it goes live.

1.5 Scope

The scope of this document is to detail down the distillery processes as per the project requirements.

- GS1 Registration
- Distillery Processes
- ESCIMS Implementation and Operation
- Responsibility
- Recommendation
- Application Security

Distillery Definition

The premises where distillation and/or packaging of alcohol are carried out are known as a distillery. Hence in our ESCIMS application, the premises where packaging of distilled alcohol (liquor or beer) is taken place are considered as distillery.

2. Distiller as Stakeholder

ESCIMS proposes to automate and regulate liquor sale in Delhi. In order to carry out the project successfully it is important to collaborate with all the stakeholders. The track of liquor entering in to Delhi starts from the premise of Distilleries. Thus distilleries have an important role to play in this endeavour. The way distilleries currently interact with excise department will change in the proposed system.

2.1 Business Functions Covered

In the proposed system following business functions shall be affected:

- Issue of License
- Issue of Import Permit
- Scheduling of production
- Labelling and Dispatch
- Payment of Requisite fee and excise Duty

2.2 Benefits for Distiller

Distillers shall also be benefited from this system as:

- Distilleries can apply online for the license and track its status.
- With enhanced visibility of stock, distilleries can optimize the efforts for applying and getting the import permit. Further import permit can be applied and tracked on line. Delivery of IP can be obtained on electronic format both for distillery and respective state excise department at distilleries to facilitate the whole process.
- Proposed ESCIMS system will be mapped to the distillery processes and support its current functions from scheduling of production to the dispatch process.
- Better control over inventory is achieved.
- Supply of spurious liquor is reduced, protecting brand image and loss of revenue to the distiller.
- Reliability and efficiency in delivery is achieved.
- All payments of requisite fees and duties can be made online with proper tracking and controls.

2.3 Distillery Processes

For the purpose of understanding of ESCIMS, Distillery processes are mapped to ESCIMS requirements by dividing in three steps:

1. Scheduling for Batch/Lot
2. Production and Packaging
3. Dispatch of liquor against IP

2.3.1 Brief Processes at Distillery

- Request of barcode sequence number while scheduling of production for a batch/lot and download unique serial number of bottles and Serial Shipping Container Code (SSCC) of cases for each SKUs/GTINs.

- Print and paste GS1 2D Data Matrix bar-code & mono case using the downloaded unique serial number for a GTIN (Unique Serial Number on each bottles and its mono case must be same).

- Print and paste GS1- 128 linear barcode using downloaded Serial Shipping Container Code (SSCC) for cases.

- ESCIMS will provide both mapped and unmapped data as requested during licensing registration.

- Since ESCIMS will provide the data in the format, where bar codes for number of bottles in one case and associated bar code of case can be printed together (Mapped data), distillery will have to make sure not to mix bar codes while pasting them on bottles and cases.

- Distiller will upload mapped data both in case of mapped and unmapped data after entering batch number, manufacturing date and expiry date.

- Access the import permit from ESCIMS by login in the ESCIMS system. State local excise office will also be provided with necessary interface to access the import permits from Delhi Excise.

- After obtaining the necessary documentation (Export permit and Transport permit) from state local excise department, perform the dispatch activities.

- Each case against a particular IP is to be scanned during dispatch process.

- Upload the cases scan data (Excel, text or XML) on ESCIMS portal whenever liquor is dispatched from distillery to bonded warehouse for each truck after against the particular IP**.**

- On successful upload of case wise against Import permits, truck exit time will be captured by the ESCIMS and the delivery challan will be generated for printing.

- If any truck carries liquor of more than one import permit, distillery needs to upload data on ESCIMS portal import permit wise. Only one delivery challan will be issued against one truck for both the IPs.

2.4 Change Management

The existing business processes will be affected with the onset of the new system. It is important that the transition process be smooth and systematic. A detailed training material shall be prepared for the stakeholders and shared with them before the project 'Go-Live' in order to make change management a collaborative process. The most critical change that distilleries will have to take up is related to bar-coding. Hence Delhi Excise has decided to share the requirements pertaining to proposed bar-coding specifications and related infrastructure at this initial stage.

3. ESCIMS Implementation and Operations

3.1 Prerequisites

To integrate distillery processes to meet the ESCIMS requirements, distilleries have to fulfil prerequisites.

3.1.1 GS1 Registration

- Most of the distilleries are registered with GS1 India and have got **Global Company Prefix (GCP)** from GS1. In case any distillery is not registered, the same is to be registered to get the GCP.
- **GCP** to be supplied to Excise department at the time of license application by all distilleries in future.
- Respective brands/SKUs (bottle/cases) are also to be registered with GS1 to get GTIN.
- GTIN number is also to be provided to Excise department at the time of license registration.

Note: In ESCIMS, cases will be tracked and traced across supply chain from Distillery to the end point in vends, therefore, GTIN will be assigned to each cases and registered with GS1.

A detail of GS1 Barcode Standards for bottles and cases is provided at **Annexure-I** for ready reference in **Appendix**.

3.2 Distillery Activities

3.2.1 Scheduling for Batch/Lot

While scheduling for batch/lot, distiller has to perform below activities.

3.2.1.1 Request for Barcode Sequence Number

Distiller will request barcode sequence numbers from ESCIMS while scheduling of production for a batch/lot.

Distiller will selects the products or brands already registered in ESCIMS and enter quantities of bottles schedule for manufacturing, ESCIMS will calculate quantity of cases as per details provided earlier at the time of brand registration and provide bar code number for bottles and cases. For ease of operations for distilleries, this data will be arranged in pre-mapped format for cases and bottles.

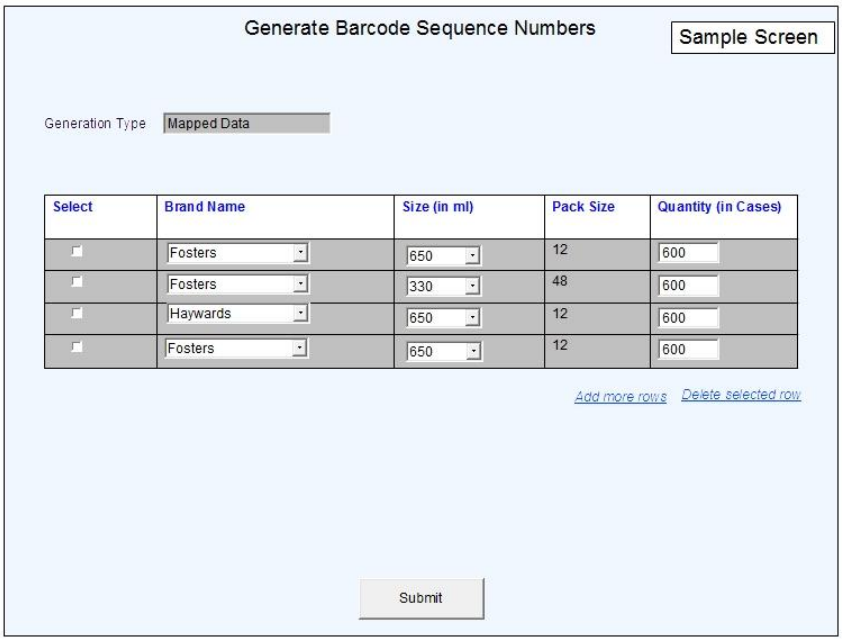
Distiller will download pre-mapped data. Pre-mapped data means that ESCIMS will do the mapping of cases and bottles without batch number, manufacturing date and expiry date.

Distiller will generate barcodes from the numbers provided after entering the batch number, manufacturing date and expiry date. Distillery will print generated barcodes using barcode printer while maintaining the mapping of (e.g. One strip may have 1D bar code of case and 2D bar code of associated bottles as per pack size and in case of mono carton, 2D barcodes will be printed in duplicates in one strip and then 1D barcode for case).

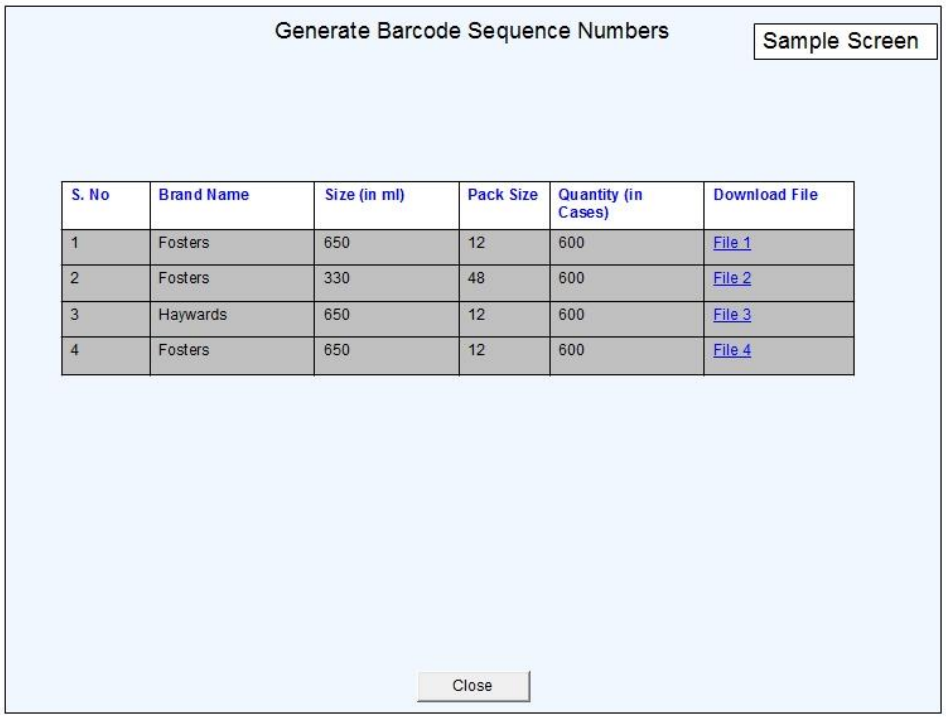
Generated barcodes on bottles and cases will be pasted as per printed mapped data. Precaution will have to be taken to maintain the mapping of data.

Finally, Distiller will do interim upload of mapped data before dispatch.

1. Request for Barcode Sequence Number



2. Download Barcode Sequence Number



Note 1:

In order to support the future upgradation and automation of the required ESCIMS processes by distilleries, system will also have the facility to provide unmapped data of bottles and cases barcodes with unique serial number for bottles and unique SSCC for cases.

In such cases, unmapped data will be used to print (In production line or outside) the generated barcodes on bottles. Bar code data of cases may be used during packing and mapping is ensured through scanning of the bottle data. Distilleries will have to ensure mapping of case data with the bottles data in that particular case during the process.

ESCIMS will provide the interface for uploading the mapped data in Excel or XML format.

Sample XML format of bottles and case mapping is provided at **Annexure-II** for ready reference in **Appendix**.

Note 2:

At the time of license renewal or applying for license, distiller will need to select and inform the type of data (Mapped or unmapped) intended to be used by them in their processes.

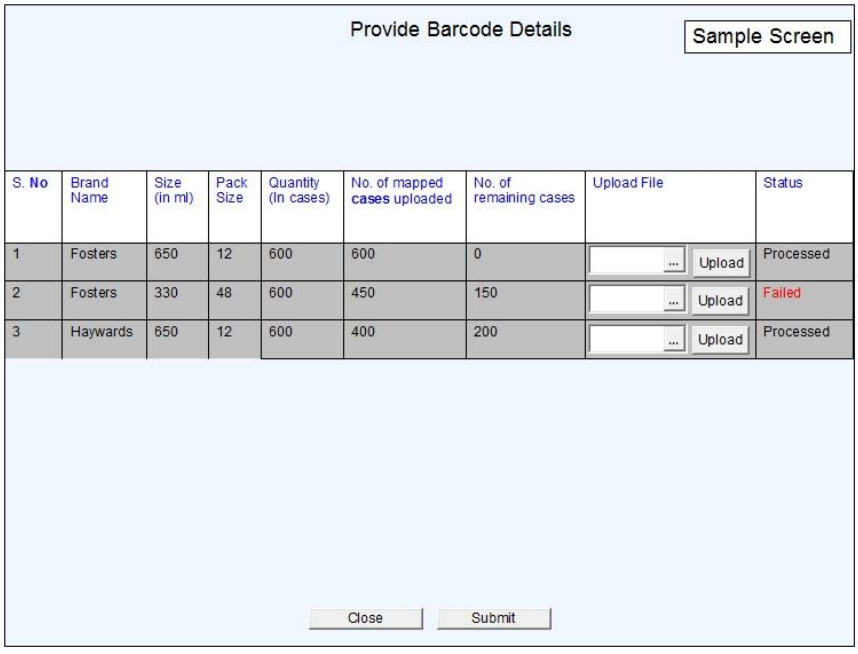
Based on the methods, ESCIMS will provide barcode sequence numbers when distiller requests during scheduling of production for a batch/lot. Any change in the method will have to be communicated to Excise separately.

Note 3:

Downloaded requested barcode sequence numbers will be purged in 6 months from ESCIMS.

Note 4: Expiry date will be zero in case of hard liquor.

1. Upload of mapped data for both mapped and unmapped data.



3.2.1.2 Breakage Handling

In case of any breakage before dispatch, distiller will scan the broken bottle barcode and will print the same barcode and paste on fresh bottles, since data has already been uploaded in ESCIMS before dispatching.

If distiller intends to use extra bottle barcode number for printing and pasting on fresh bottle then distiller has to upload updated barcode information of case-bottle mapping in ESCIMS before starting the dispatch process.

3.2.2 Dispatching against Import Permit

At the time of dispatch, each case will be scanned using hand held scanner to capture the case data in an Excel, Text or Xml file. All cases against one IP are to be included in a single file.

The scanned data (in Excel, Text or XML format) of cases against particular IP will be uploaded after selecting the particular import permit in ESCIMS after login. During uploading, ESCIMS will validate uploaded scanned cases barcode details using pre-mapped or mapped data. Also ESCIMS will perform other validation likes GTINs, Number of cases and bottles, pack size, unique number etc. Any failed validation will be immediately notified by the system.

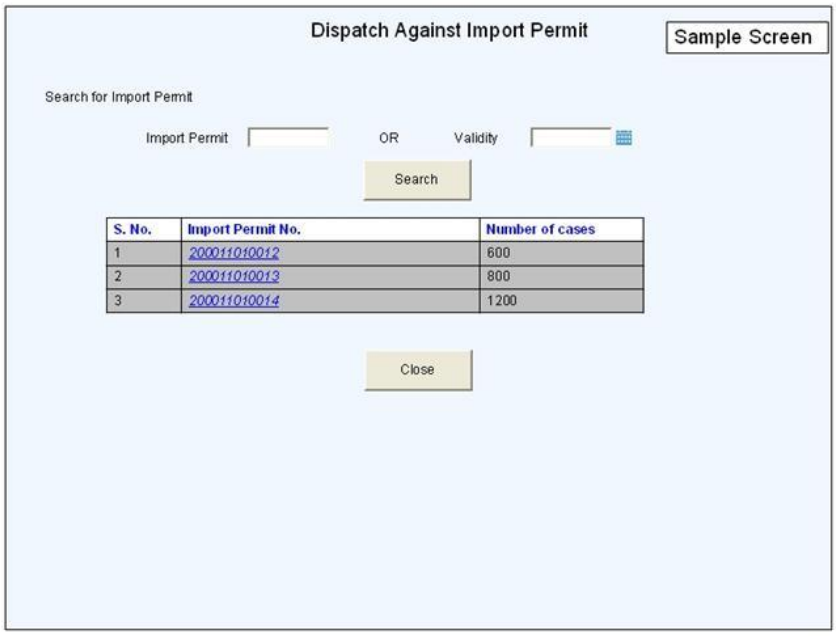
Details of truck and its driver will also have to be entered during the process.

After successful validation, truck exit time will be captured. Distiller will print the delivery challan from ESCIMS to complete the dispatch process.

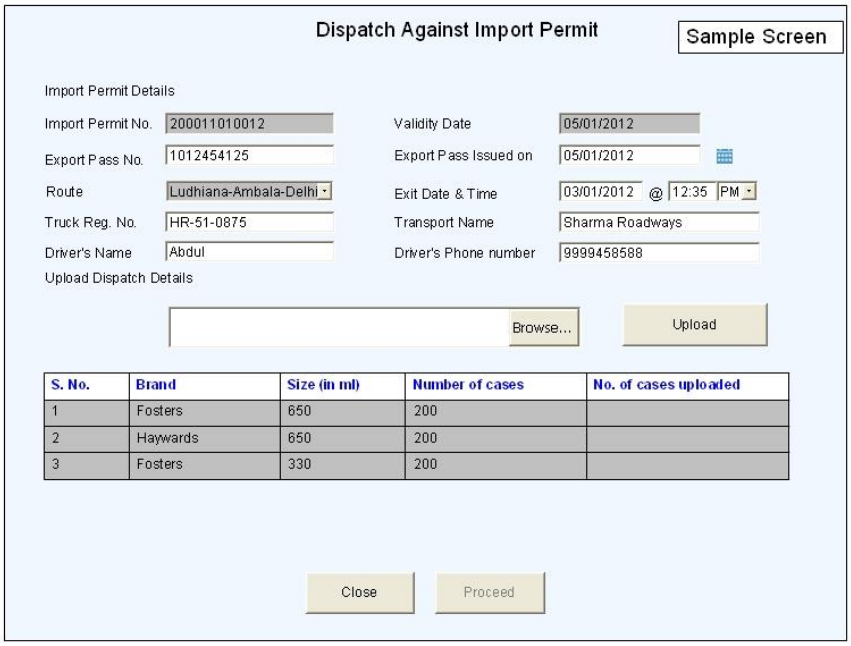
If two IPs are selected for dispatch in one truck then one delivery challan will be generated for both IPs and distillery needs to upload data on ESCIMS portal import permit wise.

Information about the dispatch against a particular IP will be immediately available to Bonded Warehouse for receiving of stocks against import permit shown as “Dispatched from distillery” in ESCIMS.

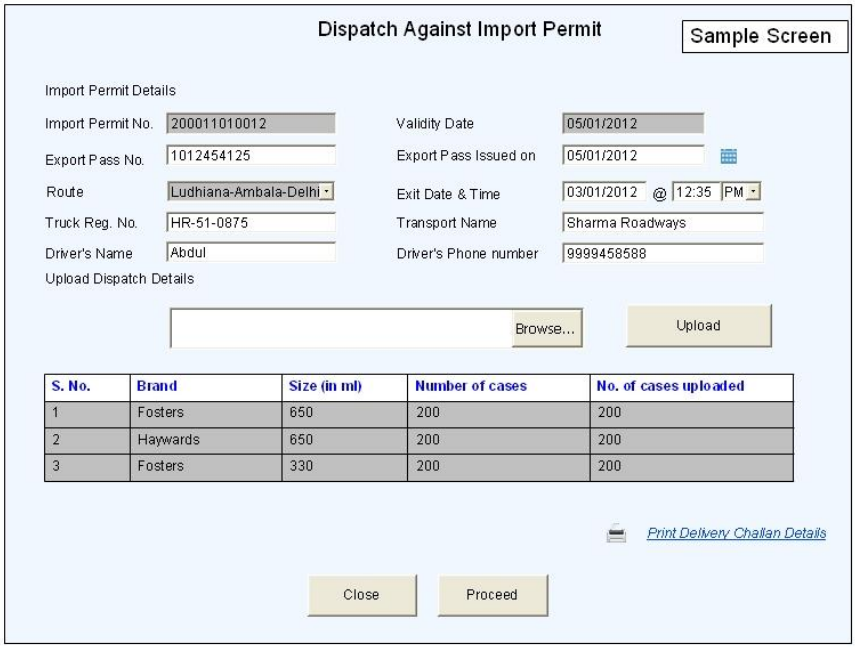
1. Select Import Permit against which dispatch is to be done



2. Upload of Case details against Import Permit



3. Print delivery Challan after successful validation of uploaded file.



4. Responsibility

The responsibilities of developing applications in order to perform distillery activities and achieve ESCIMS objectives are listed below:

S. No.	Distillery Activities	Responsibility	Application
1.	Global Company Prefix Registration with GS1	Distiller	NA
2.	Registration of each SKUs and Cases (GTINs)	Distiller	NA
3.	Distiller will provide bottle and case mapping at the time of license registration	Distiller	ESCIMS
4.	Raise demand order request	Distiller	ESCIMS
5.	Payment of Import Fees	Distiller	ESCIMS
6.	Import permit availability to distiller	Excise	ESCIMS
7.	Import Permit availability at State Local Excise Office	Excise	ESCIMS
8.	Local Excise Clearance for Export Pass and Transport Permit	Distiller	Distiller Application
9.	Distiller will register method for Offline and Online during license registration	Distiller	ESCIMS
10.	Request of Barcode Sequence Number	Distiller	ESCIMS
11.	Printing of barcode on bottles and cases as per downloaded barcode sequence number	Distiller	Distiller Application
12.	Pasting of barcode labels on bottles and cases	Distiller	Distiller Application
13.	Mapping of bottles and case for Online Method	Distiller	Distiller Application
14.	Upload of mapped data for Online Method	Distiller	ESCIMS
15.	Cases details as per Excel, Text or XML format Import Permit wise	Distiller	Distiller Application
16.	Distiller will upload cases details during dispatch against Import Permit	Distiller	ESCIMS
17.	Distiller will print Delivery Challan	Distiller	ESCIMS

5. Recommendation

Below are the recommendation based on the interactions, site visits and requirements of the project as specified.

- GS1 India registration process to be followed by Distillers is completed at the earliest. It should be a pre-requisite before they can use proposed ESCIMS application.
- Distillers should register their SKUs with GS1 at the earliest.
- Each distiller should study and analyse their current process and adopt the new system in a manner that suits their manufacturing process.
- Each distiller should undertake a pilot for its manufacturing unit, assembly line so that the outcome may be in line with desired objectives.
- Distillers should ensure that 1D or 2D barcode label is not defaced. Regulatory requirements are not stamped or printed over barcode label.
- In case of damages before dispatch from distillery, as per the current practice, the distiller re-packs before dispatching. Distiller is expected to rescan the re-packed cases/bottles and update the database to finally upload an updated data.
- The process of upload and excel or XML creation should be tested and followed as advised so as to avoid any mismatches of data about bottle/cases in the supply chain.
- The case quality should be improved to avoid re-packaging instances in view of transit damages, besides handling of cases has to be improved.
- The expected completion date of distilleries readiness is **30th Sep 2012.**
- The Distilleries are expected to confirm the system implementation and its outcome/results to Delhi Excise and TCS at the earliest.

6. Application Security

The OWASP Top 10 (Open Web Application Security Project) web application security will be implemented in ESCIMS (portal and core application) application. It will be implemented in different layers of ESCIMS application.

The OWSAP Top 10 securities are:

1. A1: Injection
2. A2: Cross-Site Scripting (XSS)
3. A3: Broken Authentication and Session Management
4. A4: Insecure Direct Object References
5. A5: Cross-Site Request Forgery (CSRF)
6. A6: Security Mis configuration
7. A7: Insecure Cryptographic Storage
8. A8: Failure to Restrict URL Access
9. A9: Insufficient Transport Layer Protection
10. A10: Un validated Redirects and Forwards

Authentication and Authorization of login through portal is the first level security. Further, as soon as user login to the ESCIMS application through portal, a **secure Session will be started.**

Since Distiller will upload the dispatched details in XML format against Import Permits (IPs) therefore uploaded XML will be virus scanned through antivirus. **Application firewall Mod Security** with Clam Antivirus will be used for virus scanning.

7. Appendix

7.1 Bill of Material

S. No.	Hardware	Descriptions
1.	Desktops with Internet Broadband Connection	Standard configuration of 2GB to 4 GB RAM, above 500GB Hard disk and latest Anti-Virus software and requisite application to store data and create excel or XML for upload to ESCIMS using Broadband Internet Connection.
2.	Scanner	Scanning of 1D and 2D barcodes Detailed Specifications is provide in **Annexure- III**
3.	Printer	Printing of 1D and 2D barcodes Detailed Specifications is provided in **Annexure-III**
4.	Barcode Labels	For printing 1D and 2D Barcodes on barcode labels Detailed Specifications is provided in **Annexure-IV** for Tamper Evident Labels Detailed Specifications is provided in **Annexure-I** for barcode labels dimension.

7.2 Annexure – I – GS1 Barcode Standards for Bottles and Cases

Refer Annexure –I of this document

7.3 Annexure – II – Sample XML Format

Refer Annexure – II of this document

7.4 Annexure – III – Scanner and Printer Specifications

Refer Annexure – III of this document.

7.5 Annexure – IV – Tamper Evident Labels

Refer Annexure – IV of this document.

Annexure – I – GS1 Barcode Standards for Bottles and Cases

GS1 standards in general provide interoperability, flexibility and vendor independence which in turn result in reduction in end product costs to businesses and consumers. These widely implemented standards enable unique and universal identification of products, assets, services, entities/locations, data capture and seamless sharing of supply chain information between trading partners including manufacturers/ suppliers, retailers and consumers. Flow of physical supplies and data sharing/querying also becomes faster, more accurate and seamless across multiple trading partners in supply chains.
GS1 standards works on Identifiers, these identifiers combines with automatic identification technologies like Bar-Codes to establish a connection between the physical entities involved in a supply chain and their related information.

Broadly, there are two types of identifiers:
1. GS1 Identification key, For e.g. GTIN, Batch #, Mfg. Date, Unique Serial #,
2. GS1 Application Identifier, For e.g. (01) for GTIN, (10) Batch #, (11) Mfg. Date, (21) Unique Serial #

Based on the symbol used to encode data, GS1 bar-codes can be categorized into two broad categories:

1. **GS1 barcodes with 1D/linear symbols which include:**
   - European Article Number (EAN) /Universal Product Code (UPC)
   - GS1 DataBar
   - GS1-128
   - Interleaved 2 of 5" (the Barcode Symbology used) and 14 digits (the length of the container symbol (ITF-14)

2. **GS1 BarCodes with 2D symbols which include:**
   - GS1 DataMatrix
   - GS1 composite component

As per project requirement, **1D GS1 128 barcode symbology** shall be used at case/case level and **2D GS1 Data matrix symbology** shall be used at Bottle level/Mono Case/Small Case.

Data Structure

GTIN 14 Data Structure

Extension Digit	Company Prefix ----------→						Item Reference ←----------					Check Digit
N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14

Company Prefix

It consists of country code and Company code registered with GS1. Country Code is "**890**" for company registered with GS1 India office.

SSCC (Serial Shipping Container Code) – The GS1 identification key used to identify individual logistic Unit. The key is comprised of an Extension digit, GS1 Company Prefix, Serial Reference, and Check Digit.'

SSCC Data structure

Application identifier	Extn Digit	Company Prefix ----------→								Serial Reference ←----------							Check Digit
00	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18

Application identifier (00) indicates the data field contains an SSCC.

Extension Digit is used to increase the capacity of Serial reference No. with SSCC. It ranges from 0-9.

GS1 Company Prefix A globally unique number assigned to a GS1 member company

Serial reference – A global unique Number assigned by company.

Check Digit A modulo-10 number calculated across the preceding digits to ensure data integrity.

Check Digit

Check Digit is computer check digit which makes sure barcode is correctly composed. This calculation is done by using Modulo 10 algorithm.

Here is how a mod10 check digit is calculated:

1. For this example, we will use a barcode containing the data 12345678912. Starting from the left side of the bar code, add together every other digit, ignoring the check digit. Add the first, third, fifth, seventh, ninth, and eleventh digits:

   1+3+5+7+9+2=27

2. Multiply the result from step 1 by 3:

   27*3=81

3. Add together the remaining digits. Add the second, fourth, sixth, eighth, tenth, and twelfth digits:

   2+4+6+8+1=21

4. Add the results of steps 2 and 3:

   81+21=102

5. Find the minimum number which, when added to the result from step 4, will generate a number that is evenly divisible by 10:

   102 + n = 110
   n = 8

The number 8 is the mod10 check digit for this arrangement of digits.

Case Barcode

Implementation Guidelines for GS1 -128 1D Barcode at Case Level

At case/case level, two barcodes following GS1 128 Barcode symbology shall be printed on a single label to be pasted on each case/case by the distiller.

a) The first barcode will encode GS1 GTIN number, batch number, and best use before date.

Attribute	Description	Value	Size(N-numeric, AN-Alpha Numeric)
Application identifier	To Identify GTIN Number	01	N2
GTIN	Indicator + Company Prefix + Item Number+ Check Digit		N14
Application identifier	To identify Batch number	10	N2
Batch Number	A unique Number assigned by Distiller for a batch		AN7
Application identifier	To identify Manufacturing Date field	11	N2
Manufacturing Date	Manufacturing Date of liquor	Date shall be in (YYMMDD) format	N6
Application identifier	To identify Best before date field	15	N2
Best before Date	Expiry date of liquor	Date shall be in (YYMMDD) format	N6

b) The second Barcode will encode unique serial number (SSCC – Serial Shipping Container code) of each case up to 18 Digits.

Attribute	Description	Value	Size(N-numeric, AN-Alpha Numeric)
Application identifier	To identify Data filed as SSCC	00	N2
SSCC	Unique Serial shipping Container Code downloaded from ESCIMS		N18

First bar-code structure at case level:

This bar-code will have GTIN number (a unique product code for case), batch number and expiry date.

AI	GTIN-14			AI	Batch Number	AI	Manufacturing Date	AI	Best Before Date
	Extension Digit (1 digit) Country Code (3 digits)	Company Prefix + Item Reference Number(9 digits)	Check Digit (1 digit)						YYMMDD
01	08902967201905			10	0000518	15	111010	15	000000

ABC Company Limited registered in GS1 India. The Components of GTINs are follows:

Extension Digit – 0
Country Code – 890
Company Code – 2967
Item Reference – 20190 – Director`s Special Black Whisky 750ml case pack
Batch Number – 0000518
Manufacturing Date – 111010 in (YYMMDD format) - 10-Oct-2011
Best Before Date – 000000 (It will be used in case of beer otherwise it will be zeros for other liquors)

Second bar-code structure at case level:

SSCC (Serial Shipping Container Code) to identify individual case uniquely.

Application Identifier Code	Serial Shipping Container Code (Unique Serial Number) (18 digits)
00	089029670100012345

Extension Digit – 0
Country Code – 890
Company Code – 2967
Unique Serial Number – 010001234 – Uniquely identification of case – It must be unique and unique serial number must be assigned from downloaded serial number from ESCIMS.

Bottle Barcode

Implementation Guidelines for GS1 2D Data Matrix Barcode at Bottle Level/Mono Case or Small case (secondary packaging) of 60 ml bottles

At Bottle level/Mono Case or Small Case, 2D GS1 Data matrix symbology shall be used encoded with GTIN and unique serial number provided by Distiller.

Attribute	Description	Value	Size(N-numeric, AN-Alpha Numeric)
Application identifier	To identify GTIN Number	01	N2
GTIN	Extension Digit + Company Prefix + Item Number+ check digit		N14
Application identifier	To identify unique serial number	21	N2
Serial number	Unique Serial Number downloaded form ESCIMS for GTIN/SKU		N10

Bottle/Mono Case/Small Case Barcode Examples

Application Identifier Code	GTIN-14			Application Identifier Code	Unique Serial Number
	Extension Digit (1 digit) Country Code (3 digits)	Company Prefix + Item Reference Number (9 digits)	Check Digit (1 digit)		(10 digits)
01	08902967200905			21	0000000123

ABC Company Limited registered in GS1 India. The Components of GTINs are follows. It includes Unique Serial Number:
Extension Digit – 0
Country Code – 890
Company Code – 2967
Item Reference – 20090 – Director`s Special Black Whisky 750ml
Unique Serial Number – 0000000123 – It must be unique and unique serial number must be assigned from downloaded serial number from ESCIMS for a batch.

Technical Specifications for Distillery

The quality of barcode implementation shall have an impact at various points of the supply chain in terms of readability of the barcode. It is important that barcode complies with GS1 standards and the technical specifications suggested in this section.

Barcode Specification

Bar coding is a Data Encoding & Capture mechanism. It is a way to rapidly, accurately and efficiently gather information and transmit it to a computer.

Case – 1D Barcode Specification

Two linear 1D barcodes are recommended for tracking the cases using GS1 128 symbology.

1. **First barcode contains following information:**

a) AI (01) – GTIN – 14 digits
b) AI (10) – Batch Number – 7 Alphanumeric
c) AI (11) – Manufacturing Date – 6 digits in YYMMDD format
d) AI(15) – Expiry Date – 6 digits in YYMMDD format

2. **Second barcode contains:**

a) AI (00) – Serial Shipping Container Code (SSCC) – 18 digits – SSCC will be downloaded from ESCIMS when requesting for barcode sequence number while scheduling of production for a batch and it must be unique.

Note:

- **All above information of first barcode GTIN, Batch Number, Manufacturing Date and Expiry Date and of second barcode SSCC will also be printed in human readable text as per the statutory requirements.**
- **If Expiry Date is not encoded in generated barcode then it should not be printed in human readable text.**

Bottle/Mono Case/Small Case – 2D Barcode Specification

2D Data Matrix symbology is recommended for tracking the bottles and its mono case or small case in case of secondary packaging of 60 ml bottles, where applicable.

2D barcode contains following information:

a) AI (01) – GTIN – 14 digits
b) AI(21) – Unique Serial number

For secondary packaging, separate 2D Barcodes will be used for printing and pasting on secondary case. These 2D barcode GTIN and unique number will be downloaded from ESCIMS.

All above information GTIN and unique serial number will also be printed in human readable text. Batch number and manufacturing date will be printed on bottles labels same as currently being printed on production line.

Note:

a) Regulatory Requirement such as Batch Number and Manufacturing Date will not be encoded in 2D barcode.
b) Downloaded unique serial number from ESCIMS will be used and must be unique for bottles/mono cases.

c) **Unique Serial Number of bottle and its mono case must be same.**
d) **Downloaded unique serial number of secondary case of 60 ml bottles will be used and must be unique for secondary case.**

Barcode Dimension

Minimum sizes which are readable, are recommended for barcode dimensions of 1D and 2D barcodes. These can easily be scanned by recommended barcode scanners.

Case – 1D Barcode Dimension

Contents of 1D barcode are described in S**ection 2.1.1**.

First Barcode
Mil Size: 10 Mils
Barcode Dimension – 2.85" (Length) x 0.40" (Width)
Read Distance – By Hand Held Terminal – 4" – 8"

Second Barcode
Mil Size: 15 Mils
Barcode Dimension – 2.27" (Length) x 0.40 (Width)
Read Distance - By Hand Held Terminal – 3" – 9.5"

Label Size – 4''(Length)x4''(Width) for both case barcodes in one label
Paper Type

- **Temper Evident Label** – recommended resin ribbons for Thermal Transfer printing

Sample Case Barcode:

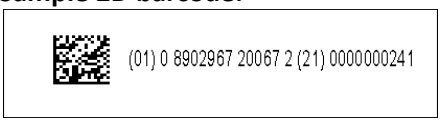
Bottle/Mono Case/Small Case – 2D Barcode Dimension

Contents of 2D barcode are described in **Section 2.1.2**.

Mil Size: 15 Mils
Barcode Dimension – 0.24" (Length) x 0.24" (Width)
Read Distance – By Hand Held Terminal – 2" – 6"
Label Size – 2''(Length) x 0.6''(Width) sticker
Paper Type –

- **Temper Evident Label** – recommended resin ribbons for Thermal Transfer printing

Sample 2D barcode:



Label Size

Case – 1D Barcode Label Size

The recommended label size for 1D barcode would be 4" (length) X3" (Width) or 4" (Length) x 4" (Width) with 10 mil Bar Code Size for the first bar code and 15 mil Bar Code Size for the second bar code so that human readable text and other text if required can also be accommodated. The size of 1D bar code is more or less same for all cases as there is no space consideration.

Bottle/Mono Case/Small Case – 2D Barcode Label Size

The recommended label size for 2D Barcode would be 2'' (Length) x 0.6'' (Width) on sticker with 15 mil Bar Code Size.

Each distillery has to ensure all parameters of 2D barcode have been taken care for all current and future product launches in new packaging.

Parameters for 2D Barcodes:

1. **Barcode Dimension** – as described in **Section 2.2.**
2. **Label Size** - as described in **Section 2.3.**
3. **Read Distance** - as described in **Section 2.2.**
4. **Scanning on Low Visibility** – Should work fine on the low visibility also.
5. **Paper Type –** Water proof, self destructive, smudge proof – Should preferably be **Temper Evident Label.**
6. **Glue Quality**
7. **Life of Ink printed by printer** – It should be 1 to 2 years.
8. **Quality of Case Paper**

PCR (Print Contrast Ratio) – Scanner should have minimum PCR of 25% so that it can read poorly printed barcode with low contrast between foreground and background.

Annexure – II – Sample XML Format

Sample XML format is described for a Case of 12 Bottles:

Case 1D Barcode Details:

GTIN : 18903456423462
Batch Number : abcde01
Manufacturing Date : 120308
Expiry Date : 000000
SSCC serial Number : 089034561234567820 (Downloaded from ESCIMS)

Bottle 2D Barcode Details:

S. No	GTIN	Serial Number (Downloaded from ESCIMS)
1	08903456423467	1563789401
2	08903456423467	1563789402
3	08903456423467	1563789403
4	08903456423467	1563789404
5	08903456423467	1563789405
6	08903456423467	1563789406
7	08903456423467	1563789407
8	08903456423467	1563789408
9	08903456423467	1563789409
10	08903456423467	1563789410
11	08903456423467	1563789411
12	08903456423467	1563789412

Sample XML Format for Cases-Bottles mapping details for mapped and unmapped data:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2011 rel. 3 sp1 (http://www.altova.com)-->
<BarCodeDetails xsi:noNamespaceSchemaLocation="BarCodeDetails.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
        <IPDetails IPNumber="IP001">
                <CaseDetails>
                        <GTIN> 18903456423462</GTIN>
                        <BatchNumber>abcde01</BatchNumber>
                        <MfgDate>120308</MfgDate>
                        <ExpDate>000000</ExpDate>
                        <SSCC>089034561234567820</SSCC>
                        <BottlelDetails>
                                <GTIN>08903456423467</GTIN>
                                <SerialNumber>1563789401</SerialNumber>
                        </BottlelDetails>

                        <BottlelDetails>
                                <GTIN>08903456423467</GTIN>
                                <SerialNumber>1563789402</SerialNumber>
                        </BottlelDetails>
                        <BottlelDetails>
                                <GTIN>08903456423467</GTIN>
                                <SerialNumber>1563789403</SerialNumber>
```

```
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789404</SerialNumber>
                    </BottlelDetails>
                     <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789405</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789406</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789407</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789408</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789409</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789410</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789411</SerialNumber>
                    </BottlelDetails>
                    <BottlelDetails>
                        <GTIN>08903456423467</GTIN>
                        <SerialNumber>1563789412</SerialNumber>
                    </BottlelDetails>
                </CaseDetails>
        .....
        </IPDetails>
</BarCodeDetails>
```

Sample XML Format for scanning of cases during dispatch against IP:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2011 rel. 3 sp1 (http://www.altova.com)-->
<BarCodeDetails xsi:noNamespaceSchemaLocation="BarCodeDetails.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
        <IPDetails IPNumber="IP001">
                <CaseDetails>
                        <GTIN>18903456423462</GTIN>
                        <BatchNumber>abcde01</BatchNumber>
                        <MfgDate>120308</MfgDate>
                        <ExpDate>000000</ExpDate>
                        <SSCC>089034561234567820</SSCC>
                </CaseDetails>
        ..... List all cases to be scanned during dispatch
        </IPDetails>
</BarCodeDetails>
```

Annexure – III – Scanner Specifications

2D Data Matrix is read by imaging cameras devices. The principle is based upon first capturing the image of the symbol and then analyzing it. This is different technology from the one used by many of the laser scanners for reading the linear barcode symbol. A linear symbol can be read by a single laser beam passing across the length of the symbol. However, to read Data Matrix symbol requires the entire image to be read in both the X and Y axis. 2D is considered to be having better readability compared to 1D. It can be read from any angle and side of scanning. In case of any minor damage to the 2D bar code, the readability is still ensured.

Scanners will be used for scanning the bottles/case during packaging of bottles and dispatch while uploading the cases on truck.

Distiller has to upload barcodes information of 1D for case and 2D for bottles in XML or excel format through ESCIMS portal.

It is to be understood by the Distiller that the product features and specifications of the devices recommended in the document for scanners are for reference only. Distillers have to decide and discussed with vendor to procure and meet the requirement of 1D and 2D barcodes scanning.

To ensure the reliability of barcode scanning, it is recommended that scanner should possess following features:

- Comprehensive data capture options — 1D, 2D, image capture
- Supports for all major 1D, PDF, postal and 2D symbologies
- High Resolution of camera
- Rugged Design
- Tempered Glass exit window
- Multiple on-board interfaces and universal cable
- Omni-directional scanning, wide working range
- Comprehensive connectivity options — including wireless, cordless and corded
- High resolution high contrast color QVGA display

A good quality hand held digital image or mobile scanners (HHT) capable of scanning GS1 barcodes (1D and 2D barcodes) possessing above mentioned features should be used.

Annexure III - Printer Specification

Broadly, the packaging of Indian Made Foreign Liquor (IMFL), Country Liquor and Beer bottles will be done in three stages in bottling lines:

1. Primary Packaging
2. Secondary Packaging
3. Tertiary Packaging

Primary Packaging

Distillers are currently pasting pre-printed labels on bottles manually or printing information like batch number and manufacturing date through inkjet printer on glued labels or through Thermal Transfer Printer (TTO) on self adhesive labels.

For printing 2D barcode with other texts in human readable form like GTIN and Unique Serial Number, Batch Number and Manufacturing Date, the following printers are recommended for inline printing on online conveyors.

1. Thermal Transfer Printers (TTO) for self adhesive labels
2. Inkjet Printer for glued labels
3. Print and Apply (PA) for Metal Can

In case of offline printing Thermal Transfer printer for self adhesive labels with resin ribbon shall be recommended.

It is to be understood by the Distiller that the product features and specifications of the devices recommended in the document for printers are for reference only. Distillers have to decide and discuss with vendors to procure and meet the requirement of 1D and 2D barcodes printing.

S. No.	Product	Description	Pack Size	Coding Media	Current Coding Method	Coding Application	Proposed 2D Coding Method	Proposed 2D Coding Application
1.	IMFL	IMFL i.e. Whisky, Vodka, Rum, Gin and Wine are packed in Glass / Plastic Bottles.	175ml, 375ml, 750ml & 1000ml	Self Adhesive	Thermal Printers to code Various Information like Batch No., Mfg., MRP etc.	Online Labelling Machine, Manual Stamping	Thermal Transfer Printers (TTO)	Online/Offline Labelling Machine- TTO (Self Adhesive Labels)
				Glued Labels	Inkjet Printer to code Various Information like Batch No., Mfg., MRP etc./	Offline Label Stacker, Online / Offline Conveyors, Manual Stamping	Inkjet Printer (IJP)	Online/Offline Conveyors- IJP (Glued Labels)
2.	Country Liquor	Country Liquor is packed in Glass / Plastic Bottles and Pouches	175ml, 375ml, 750ml	Self Adhesive/ Glued	Inkjet Printer to code Various Information	Manual Stamping	Thermal Transfer Printers (TTO)	Online/Offline Labelling Machine- TTO (Self Adhesive

S. No.	Product	Description	Pack Size	Coding Media	Current Coding Method	Coding Application	Proposed 2D Coding Method	Proposed 2D Coding Application
				Labels	like Batch No., Mfg., MRP etc.			Labels)
						Offline Label Stacker, Online / Offline Conveyors, Manual Stamping	Inkjet Printer (IJP)	Online/Offline Conveyors-IJP (Glued Labels)
				Direct Printing for Pouches	To code Various Information like Batch No., Mfg., MRP etc.	Manual Stamping	Thermal Transfer Printers (TTO)	Pouch Packaging Machine-TTO (Pouches)
3.	Beer	Beer is packed in Glass Bottles /	330ml,500ml,650 ml	Self Adhesive/ Glued Labels	Inkjet Printer / to code Various Information like B. No., Mfg., MRP etc.	Online on Bottle filling Line Offline Label Stacker, Online-Conveyors	Thermal Transfer Printers (TTO)	Online/Offline Labelling Machine- TTO (Self Adhesive Labels)
							Inkjet Printers	Online/Offline Conveyors-IJP (Glued Labels)
		Metal Cans		Self Adhesive Stickers	To code Various Information like B. No., Mfg., MRP etc.		Print and Apply (PA)	Online/Offline Metal Cans - PA (Stickers)

Secondary Packaging

Distillers are packaging bottles in mono cases manually or shrink wrapped in case of beer for small bottles/metal cans. Information such as manufacturing date and MRP are being directly printing on mono case or pasting labels through inkjet printer or manual stamping on online or offline conveyors.

For printing 2D barcode with other texts in human readable form like GTIN, Unique Serial number, batch number, manufacturing date and MRP, the following printers are recommended for inline printing on online conveyors.

1. Inkjet Printer for directing printing or on glued labels
2. Print and Apply (PA) for shrink wrapped of small beers and metal can

In case of offline printing Thermal Transfer printer for self adhesive labels shall with resin ribbon be recommended.

S. No.	Product	Description	Pack Size	Coding Media	Current Coding Method	Coding Application	Proposed 2D Coding Method	Proposed 2D Coding Application
1.	IMFL	IMFL i.e. Whisky, Vodka, Rum, Gin and Wine are packed in Outer Cases	Single Unit	Direct Coding, Labels and Manual Stamping	Inkjet Printer to code Various Information like B. No., Mfg., MRP etc.	Online / Offline Conveyors	Inkjet Printer (IJP)/ Print & Apply Machine (PA)	Online/Offline Conveyors
2.	Country Liquor	Country Liquor is packed in Glass / Plastic Bottles are not packed in Outer Cases	NA	NA	NA	NA	NA	NA
3.	Beer	Beer (Small Bottles / Metal Cans) are sometimes Shrink Wrapped.	2, 4, 6 etc	Direct Coding, Labels	Inkjet Printer to code Various Information like B. No., Mfg., MRP etc.	Online / Offline Conveyors	Print & Apply Machine (PA)	Online/Offline Conveyors

Tertiary Packaging

Distillers are packaging bottles into shipper case manually or shrink wrapped tray in case of beer for small bottles/metal cans. Information such as batch Number, manufacturing date etc are being directly printing on shipper case or on pasting labels through inkjet printer or manual stamping on online or offline conveyors.

For printing 1D barcode with other texts in human readable form like GTIN, Batch Number, Manufacturing Date and Serial Shipping Container Code (SSCC), the following printer is recommending for printing.

1. Print and Apply (PA) for Shipper Cases in case of inline printing on online conveyor
2. Thermal Transfer Printer in case of offline printing

S. No.	Product	Description	Pack Size	Coding Media	Current Coding Method	Coding Application	Proposed 1D Coding Method	Proposed 2D Coding Application
1.	IMFL	IMFL is packed in Shipper Cases	12 or 24 etc.	Direct Coding	Inkjet Printer, Manual Stamping to code Various Information like B. No., Mfg., MRP etc.	Online / Offline Conveyors	Print & Apply Machine (PA)	Online/Offline Conveyor
2.	Country Liquor	Country Liquor is packed in Shipper Cases	12 or 24 etc.	No Coding / Direct Coding	Inkjet Printer, Manual Stamping to code Various Information like B. No., Mfg., MRP etc.	Online / Offline Conveyors	Print & Apply Machine (PA)	Online/Offline Conveyor

S. No.	Product	Description	Pack Size	Coding Media	Current Coding Method	Coding Application	Proposed 1D Coding Method	Proposed 2D Coding Application
3.	Beer	Beer is packed in Shipper Cases / Shrink wrap Trays	8, 12, 14, 16 etc	Direct Coding	Inkjet Printer, Manual Stamping to code Various Information like B. No., Mfg., MRP etc.	Online / Offline Conveyors	Print & Apply Machine (PA)	Online/Offline Conveyor

In view of transit damages, it is recommended that the case quality is improved to avoid re-packaging instances. Besides, handling of cases has to be improved.

Annexure – IV – Tamper Evident Labels

Material Description: Specifically designed for corrugated boxes having rough surface, dust and high moisture content. It is highly effective for manual application of the labels or where no applicator being used. Also, where the storage of boxes is improper so that label does not peel off.

The evident properties are derived from top layer, which is semi gloss white, co-extruded film consisting of an expanded polystyrene layer with a clear polystyrene surface film. The top coat is highly receptive to thermal printing as it is having matt finish. The total calliper of material is being 0.145mm with difference of plus minus 10%.

Adhesive:

A highly aggressive permanent rubber based adhesive featuring high initial tack and excellent ultimate bond strength to a wide range of substrates. The Adhesion is equally effective for Manual as well as Auto Application of the Labels.

Minimum Application Temperature: + 5^{o} C

(The minimum temperature at which the label can be applied and will adhere)

Service Temperature Range: - 20^{o} C to + 70^{o} C

(The temperature range to which the label can be exposed after the adhesion bond to the substrate has been formed)

Application:

Typical applications include product identification labels on various types of corrugated boxes and glass containers. The moderate internal strength of the face allows the product to be used as a tamper evident label. The label can also be used as a shrinkable seal by using heat after application. Adhesive is in compliance with FDA recommendations, where incidental contact between food and adhesive may be possible.

Conversion:

This product can be printed in the usual printing technologies; for variable information printing thermal transfer and inkjet printing can be used. It's recommended to use Resin Ribbons for Thermal Transfer Printing for better outcome.

Customized security cuts are also advised according to label size, to enable a better view of temper evidence if label is tried to be peeled off from the substrate.

It has also been observed that the bigger the label sizes provide better adherence due to larger bonding area and increase the material effectiveness.

Material should be handled with great care; rough handling may leave permanent impressions in the relatively soft face stock.

Shelf Life: Two years when stored at 22^{o} C

ESCIMS

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