HS Code/CAS Code/UN Code and their relevance to Customs work

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WCO Programme Global Shield (PGS) – E-book No.04

[Training Material for Departmental Use]

E-BOOK

On

HS Code, CAS Code & UN Code
Note:

1. In this E-book, attempts have been made to explain HS Code/CAS Code/UN Code and their relevance to Customs work. It is expected that it will help departmental officers in their day-to-day work.

2. Though all efforts have been made to make this document error free, but it is possible that some errors might have crept into the document. If you notice any errors, the same may be brought to the notice of the NACEN, RTI, Kanpur on the Email address: rtinacenkanpur@yahoo.co.in. This may not be a perfect E-book. If you have any suggestion to improve this book, you are requested to forward the same to us.

3. This e-book is one of the several e-books dealing with different aspects of WCO Programme Global Shield (PGS). The Programme Global Shield (PGS) is a long term law enforcement initiative of WCO along with its partner organizations, namely, United Nations Office on Drug and Crime (UNODC), International Police Organization (INTERPOL) and member countries. This Programme is aimed at combating the illicit diversion and trafficking of high risk precursor chemicals, which are commonly used by criminal elements/terrorist organizations to make Improvised Explosive Devices (IEDs).

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Sd/-

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Abbreviations

HS: Harmonized System [or Harmonized Commodity Description and Coding System]

CAS: Chemical Abstract Service

CAS RN: Chemical Abstract Service Registry Number

CAS No.: Chemical Abstract Service Number

CTH: Custom Tariff Heading

GHS: Globally Harmonized System of Classification and Labeling of Chemicals (also known as Purple Book)

HAZMAT: Hazardous Material

IAEA: International Atomic Energy Agency

ICAO: International Civil Aviation Organisation

IEDs: Improvised Explosive Devices

IMO: International Maritime Organisation

MSDS: Material Safety Data Sheet

PGS: Programme Global Shield

SDS: Safety Data Sheet

TDG: Transport of Dangerous Goods

1. **Introduction**

In day-to-day work, Customs officers are required to deal with Chemicals including hazardous Chemicals. Some chemicals are safe when touched or smelled or even tasted, but a large number of such chemicals have varying degrees of hazards, toxicity and are potentially unsafe for human health. Therefore, it is important that Customs officers are aware of various codes which are used for classifying chemicals including hazardous chemicals and the purpose of such classification. Such knowledge will not only enable them to do their job better, but will also ensure their own safety.

In this context, three coding systems, namely, HS Code, CAS No. and UN No. are important. These codes may find mention in various documents submitted by the Importer/exporters to the custom officer at the time of import/export as well as are mentioned on the labels/packages of the goods. Further, UN No. is also mentioned on the transport documents as well as transport vehicles in case of hazardous chemicals. Improved understanding and awareness about these codes will enable Custom officers to detect any discrepancies in the import/export consignment by carefully looking at the accompanying documents including transportation documents.

2. **HS Codes (Harmonized System Codes)**

2.1 The Custom Tariff in most of the countries of the world is based on the Harmonized Commodity Description and Coding System (HS). It is an internationally standardized system of names and numbers for classifying traded products. It has been developed and maintained by the World Customs Organization (WCO).

2.2 HS system of classification of goods is based on HS Convention, which entered into force on 1.1.1988. As on 30.06.2015, there are 153 contracting parties (152 countries and EU (consisting of 28 members) to the HS convention. The HS codes are subjected to periodical review. So far, it has been subjected to revision five times in the past. Sixth revision of HS code shall come into force with effect from 1.1.2017.

2.3 The basic objectives of HS Convention are - (i) Trade Facilitation, and (ii) to facilitate the collection, comparison and analysis of statistics, in particular those on international trade.

2.4 The salient features of HS System are as under:-

- Organized into 21 sections and 96 chapters, accompanied with general rules of interpretation and explanatory notes.
First, the system assigns goods to section, and then proceeds to assign these goods to their specific chapter, heading, and sub-heading.

The HS assigns up to a total of 8 digits at the tariff-rate level.

Two extra digits may also be assigned as statistical reporting numbers for a total of 10 digits to be listed on entries.

To ensure harmonization, the contracting Countries to the HS Convention are required to employ at least 4-digit and 6-digit provisions, interpretational rules and notes, but are free to adopt additional sub-categories and notes.

Chapter 77 is reserved for future international use only.

Chapters 98 and 99 are reserved for national use.

All existing products can be classified into the existing HS system by using the General Rules of Interpretation.

Any product for which there is no specific sub-heading or sub-sub heading, classification can be listed under the ‘Other’ classification.

2.5 It is important to know the correct HS Code / CTH of product being imported or exported. As most of the countries of the world follow HS Convention, a CTH/HS code of a product is same in all countries of the world and understood in the same manner. Harmonized System is also used for knowing if there are any export/import licensing requirements between countries. A slight difference in classification can create a big difference in the taxes that are to be paid at the time of import and at times, improper classification may also cause products to be delayed at international borders.

2.6 For more details about HS Code and HS convention, the following Websites may be referred:

- HS web site: http://www.foreign-trade.com/reference/hscode.htm
- WCO web site: www.wcoomd.org

3. **CAS Codes (Chemical Abstract Service Code)**

3.1 Chemical Abstract Service (CAS) is a division of American Chemical Society. It is the only organization in the world whose objective is to find, collect and organize all publicly disclosed chemical substance information. It is considered to be the world’s authority for chemical information.
3.2 The CAS Registry (data base), contains over 91 million unique organic & inorganic substances and information about 15000 chemicals is added every day. The Registry maintained by CAS is an authoritative collection of disclosed chemical substance information. CAS Registry Numbers (also known as CASR No.) or CAS Nos. are universally used to provide a unique, unmistakable identifier for chemical substances.

3.3 A CAS Registry Number itself has no inherent chemical significance. It provides an unambiguous way to identify a chemical substance or molecular structure when there are many possible systematic, proprietary or trivial names.

3.4 A CAS No. has no inherent meaning but is assigned in sequential, increasing order when the substance is identified by CAS scientists for inclusion in the CAS REGISTRY database.

3.5 A CAS No. is separated by hyphens into three parts, -

- the first consisting from two to seven digits,
- the second consisting of two digits, and
- the third consisting of a single digit serving as a check digit.

3.6 The check digit is found by taking the last digit times 1, the previous digit times 2, the previous digit times 3 etc., adding all these up and then dividing the added sum by 10. Remainder remaining is check digit.

3.7 For example, the CAS number of water is 7732-18-5:

- the check-digit 5 is calculated as \((8 \times 1 + 1 \times 2 + 2 \times 3 + 3 \times 4 + 7 \times 5 + 7 \times 6) = 105\);
- 105 divided by 10
- Remainder number is 5
- 5 is the Check Digit.

3.8 For more details about CAS Nos., the CAS Website: [http://www.cas.org](http://www.cas.org) may be referred.
4. **UN Codes**

4.1 UN Numbers or UN IDs are *four-digit numbers* that identify hazardous substances, and articles (such as explosives, flammable liquids, toxic substances, etc.). UN numbers range from UN0001 to about UN3600 and are assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods (UNCTDG). They are published as part of their Recommendations on the Transport of Dangerous Goods (TDG), also known as the Orange Book.

4.2 These recommendations are adopted by the regulatory organization responsible for the different modes of transport. No UN number is allocated to non-hazardous substances.

4.3 "Dangerous goods" (also known as "hazardous materials" or "HAZMAT" in the United States) may be:

- Pure Chemical substance for example Tri-nitro-toluence (TNT), nitroglycerin),
- mixtures (for example, dynamite, gunpowder) or
- manufactured articles (for example, ammunition, fireworks).

4.4 Under UN System, the Hazards that dangerous goods pose are grouped into *nine classes* from 1-9, which may be further subdivided into divisions.

Table I

<table>
<thead>
<tr>
<th>UN Hazard Identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Class 1</td>
</tr>
<tr>
<td>Division 1.1</td>
</tr>
<tr>
<td>Division 1.2</td>
</tr>
<tr>
<td>Division 1.3</td>
</tr>
<tr>
<td>Division 1.4</td>
</tr>
<tr>
<td>Division 1.5</td>
</tr>
<tr>
<td>Division 1.6</td>
</tr>
</tbody>
</table>
Class 2  |  Gases
---|---
Division 2.1  |  Flammable gases
Division 2.2  |  Non-flammable, non-toxic (non-poisonous) gases
Division 2.3  |  Toxic (poisonous) gases

Class 3  |  Flammable liquids (and Combustible liquids [U.S.])

Class 4  |  Flammable solids; Spontaneously combustible materials;
Division 4.1  |  Flammable solids
Division 4.2  |  Spontaneously combustible materials
Division 4.3  |  Water-reactive substances/Dangerous when wet materials

Class 5  |  Oxidizing substances and Organic peroxides
Division 5.1  |  Oxidizing substances
Division 5.2  |  Organic peroxides

Class 6  |  Toxic (poisonous) substances and Infectious substances
Division 6.1  |  Toxic (poisonous) substances
Division 6.2  |  Infectious substances

Class 7  |  Radioactive materials

Class 8  |  Corrosive substances

Class 9  |  Miscellaneous hazardous materials/Products, Substances,

4.5 The most common dangerous goods are assigned a UN number. Less common dangerous substances are transported under generic codes such as "UN1993: flammable liquid, not otherwise specified".

4.6 More about the UN recommendations for safe Transport of dangerous goods. These Recommendations,

- cover the transport of dangerous goods by all modes of transport.
- Are not obligatory or legally binding on individual countries, but have gained a wide degree of international acceptance: they form the basis of several international agreements and many national laws.
- do not cover the manufacture, use or disposal of dangerous goods.
4.7 A chemical in its solid state may have a different UN number than the liquid phase if their hazardous properties differ significantly. Substances with different levels of purity (or concentration in solution) may also have different UN numbers.

4.8 For more details about UN Numbers, the website http://www.unece.org may be referred.


5.1 The UN Recommendations on the Transport of Dangerous Goods address the following main areas:

- List of dangerous goods most commonly carried and their identification and classification;
- Consignment procedures: labeling, marking, and transport documents;
- Standards for packaging, test procedures, and certification;
- Standards for multimodal tank-containers, test procedures and certification.

5.2 These recommendations contain all basic provisions for the safe carriage of dangerous goods, but they have to be completed by additional requirements which may have to be applied at national level or for international transport depending on the mode of transport envisaged.

5.3 The Recommendations on the Transport of Dangerous Goods and the IAEA Regulations for the Safe Transport of Radioactive Material are meant for all Governments for the development of their national requirements for the domestic transport of dangerous goods and international organizations such as

- the International Maritime Organization (IMO),
- the International Civil Aviation Organization (ICAO) and
- regional commissions such as the Economic Commission for Europe
- for regulations and international/regional agreements or conventions governing the international transport of dangerous goods by sea, air, road, rail and inland waterways.
6. **Globally Harmonized System of Classification and Labeling of [Hazardous] Chemicals**

6.1 The GHS is an acronym for the Globally Harmonized System of Classification and Labeling of Chemicals. The GHS is a system for standardizing and harmonizing the classification and labeling of [hazardous] chemicals. It is a logical and comprehensive approach to:

- Defining health, physical and environmental hazards of chemicals;
- Creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and
- Communicating hazard information, as well as protective measures, on labels and Safety Data Sheets (SDS).

7. **Comparative Chart of HS Code/ CAS No./ UN No.**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Subject Description</th>
<th>HS Code</th>
<th>CAS No.</th>
<th>UN No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Full Description</td>
<td>Harmonised Commodity Description and Coding System</td>
<td>Chemical Abstract Service Number</td>
<td>United Nation Number or UN IDs</td>
</tr>
<tr>
<td>2</td>
<td>Name of Developing and maintaining Organization</td>
<td>World Organization Customs</td>
<td>American Chemical Society</td>
<td>The Economic and Social Council (ECOSOC) Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labeling of Chemicals (UNCETDG/GHS).</td>
</tr>
<tr>
<td>3</td>
<td>Alternative Name</td>
<td>None</td>
<td>Chemical Abstract Registry Number (CASR No.)</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Types of Goods Covered</td>
<td>All types of Internationally Traded Goods (including Chemicals and Hazardous Goods)</td>
<td>All publicly disclosed Chemical substances.</td>
<td>All dangerous / Hazardous Goods</td>
</tr>
<tr>
<td>5</td>
<td>Objectives</td>
<td>Trade facilitation and to facilitate collection of data and Statistical analysis of International Trade data.</td>
<td>To provide a unique, unmistakable identifier for chemical substances</td>
<td>Identify hazardous substances, and articles (such as explosives, flammable liquids, toxic substances, etc.) in the framework of international transport.</td>
</tr>
<tr>
<td></td>
<td><strong>Number of digits in the Code Number</strong></td>
<td><strong>Concept of Check digit</strong></td>
<td><strong>Non Hazardous Substances</strong></td>
<td><strong>Precursor Chemicals for IEDs</strong></td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>6.</td>
<td>Normally have Six digits (consisting of two digit each for Chapter No., Heading no and subheading No. Some countries use 8 or 10 digits code for better statistical analysis purpose.</td>
<td>No check digit</td>
<td>Have HS Code</td>
<td>Have HS Code</td>
</tr>
<tr>
<td></td>
<td>5 to 10 digit number. It has three parts separated by hyphen. • the first part consisting from two up to seven digits, • the second part consisting of two digits, and • the third consisting of a single digit. [XXXXX]XX-YY-Z</td>
<td>Last digit is check digit</td>
<td>Have CAS Code</td>
<td>Have CAS Code</td>
</tr>
<tr>
<td>7.</td>
<td>4 digit number [UN numbers range from UN0001 to about UN3600]</td>
<td>No check digit</td>
<td>Do not have UN No.</td>
<td>Urea and Calcium Ammonium Nitrate do not have any UN No. assigned as these chemicals are not considered to be dangerous for the purpose of Classification.</td>
</tr>
<tr>
<td>8.</td>
<td>5 to 10 digit number. It has three parts separated by hyphen.</td>
<td>15000 CAS Nos. are added every day. Each chemical is given unique number and there is no concept of generic entry or number.</td>
<td>Fixed. It has specific for commonly known dangerous goods and generic entry system for less known dangerous goods.</td>
<td>Fixed. It has certain residual entries. If a goods/item/chemicals is not covered specifically under any sub-heading, it can be covered under residual entry “others”.</td>
</tr>
<tr>
<td>9.</td>
<td>More than 91 million numbers so far and about 15000 numbers are added every day. It is Unique number assigned to any chemical</td>
<td>Total 3600 numbers.</td>
<td>Total 3600 numbers.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>The HS is organized into 21 sections and 96 chapters, accompanied with general rules of interpretation and explanatory notes. Two Chapters 98 and 99 have been reserved from National use. Chapter 77 has been reserved for future International use.</td>
<td>More than 91 million numbers so far and about 15000 numbers are added every day. It is Unique number assigned to any chemical</td>
<td>More than 91 million numbers so far and about 15000 numbers are added every day. It is Unique number assigned to any chemical</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 8. HS Codes/CAS Code/UN Code for Precursor Chemicals commonly used for Making IEDs

**Table III**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>HS Code</th>
<th>CAS Code</th>
<th>UN Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Nitrate</td>
<td>310230</td>
<td>6484-52-2</td>
<td>1942</td>
</tr>
<tr>
<td>Nitromethane</td>
<td>290420</td>
<td>75-52-5</td>
<td>1261</td>
</tr>
<tr>
<td>Sodium Nitrate</td>
<td>310250</td>
<td>7631-99-4</td>
<td>1498</td>
</tr>
<tr>
<td>Potassium Nitrate</td>
<td>283421</td>
<td>7757-79-1</td>
<td>1486</td>
</tr>
<tr>
<td>Sodium Chlorate</td>
<td>282911</td>
<td>7775-09-9</td>
<td>1495</td>
</tr>
<tr>
<td>Potassium Chlorate</td>
<td>282919</td>
<td>3811-04-9</td>
<td>1485</td>
</tr>
<tr>
<td>Potassium Perchlorate</td>
<td>282990</td>
<td>7778-74-7</td>
<td>1489</td>
</tr>
<tr>
<td>Acetone</td>
<td>291411</td>
<td>67-64-1; 7217-25-6</td>
<td>1090</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>284700</td>
<td>7722-84-1</td>
<td>2014, 2015, 2984</td>
</tr>
<tr>
<td>Nitric Acid</td>
<td>280800</td>
<td>7697-37-2, 43625-06-5, 13587-52-5</td>
<td>1796, 1826, 2031, 2032</td>
</tr>
<tr>
<td>Urea</td>
<td>310210</td>
<td>57-13-6</td>
<td></td>
</tr>
<tr>
<td>Aluminum Powder/ flakes</td>
<td>760320, 760310</td>
<td>7429-90-5</td>
<td>1396</td>
</tr>
<tr>
<td>Calcium Ammonium Nitrate</td>
<td>310260</td>
<td>15245-12-2</td>
<td></td>
</tr>
<tr>
<td>Acetic Anhydride</td>
<td>291524</td>
<td>108-24-7</td>
<td>1715</td>
</tr>
</tbody>
</table>

**Note:**

1. No UN Number has been prescribed for Urea and Calcium Ammonium Nitrate as these chemicals are considered to be non-hazardous for transportation purposes.
2. For some chemicals, there is more than one CAS No. assigned as these chemicals are available in market in different concentration or different form and have distinct physical and chemical property, thus, requiring different CAS Number.
3. For some chemicals, there is more than one UN code as these chemicals are available in market in different concentration or different form, which poses different Hazard from transportation point of view and accordingly assigned different UN No.