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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, 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 alongwith 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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INDEX

Abbreviations	1
1. Introduction	2
2. HS Codes (Harmonized System Codes)	2
3. CAS Codes (Chemical Abstract Service Code)	3
4. UN Codes.....	5
5. United Nations Recommendations on the Transport of Dangerous Goods (Orange Book)	7
6. Globally Harmonized System of Classification and Labelling of [Hazardous] Chemicals	8
7. Comparative Chart of HS Code/CAS No./ UN No.	8
8. HS Codes/CAS Code/UN Code for Precursor Chemicals commonly used for Making IEDs.....	10

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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
UNCTDG:	United Nations Committee of Experts on 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 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 products 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 to:-

- HS web site: <http://www.foreign-trade.com/reference/hscod.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 of 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> 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-tolence (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

UN Hazard Identifiers		
Class	Division	Description
Class 1		Explosives
	Division 1.1	Explosives with a mass explosion hazard
	Division 1.2	Explosives with a projection hazard
	Division 1.3	Explosives with predominantly a fire hazard
	Division 1.4	Explosives with no significant blast hazard
	Division 1.5	Very intensive explosives with a mass explosion hazard
	Division 1.6	Extremely insensitive articles

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. United Nations Recommendations on the Transport of Dangerous Goods (Orange Book)

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 II

S. No.	Subject Description	HS Code	CAS No.	UN No.
1	Full Description	Harmonised Commodity Description and Coding System	Chemical Abstract Service Number	United Nation Number or UN IDs
2.	Name of Developing and maintaining Organization	World Customs Organization	American Chemical Society	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).
3.	Alternative Name	None	Chemical Abstract Service Registry Number (CASR No.).	None
4.	Types of Goods Covered	All types of Internationally Traded Goods (including Chemicals and Hazardous Goods)	All publicly disclosed Chemical substances.	All dangerous / Hazardous Goods
5.	Objectives	Trade facilitation and to facilitate collection of data and Statistical analysis of International Trade data.	To provide a unique, unmistakable identifier for chemical substances	Identify hazardous substances, and articles (such as explosives, flammable liquids, toxic substances, etc.) in the framework of international transport.

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

6.	Number of digits in the Code Number	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.	5 to 10 digit number. It has three parts separated by hyphen. <ul style="list-style-type: none"> • 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. [XXXXXX]XX-YY-Z	4 digit number [UN numbers range from UN0001 to about UN3600]
7.	Concept of Check digit	No check digit	Last digit is check digit	No check digit
8.	Non Hazardous Substances	Have HS Code	Have CAS Code	Do not have UN No.
9.	Precursor Chemicals for IEDs	Have HS Code	Have CAS Code	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.
10.	Frequency and Addition of Code No. in the list	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”.	15000 CAS Nos. are added every day. Each chemical is given unique number and there is no concept of generic entry or number.	Fixed. It has specific for commonly known dangerous goods and generic entry system for less known dangerous goods.
11.	Total Numbers in the list	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.	More than 91 million numbers so far and about 15000 numbers are added every day. It is Unique number assigned to any chemical	Total 3600 numbers.

8. HS Codes/CAS Code/UN Code for Precursor Chemicals commonly used for Making IEDs

Table III

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

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.
