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SOLVENTS AND ELECTRONIC COMMUNICATION DEVICES

Can you imagine leaving your home without your mobile phone in your pocket or handbag? And how would your ordinary working day be without being able to use a PC or laptop? Mobile communications are all around us and have completely transformed our lives. But few of us realise that many of these modern technologies simply could not exist if it weren't for solvents.

SCREEN-CLEANING FLUID

Fingerprints or smudges on computer screens are not just irritating, but can also cause visual problems for the user. To use your computer in the best possible conditions, the screen needs to be cleaned regularly. Isopropyl alcohol is a solvent that dissolves a wide range of stains, including fingerprints, and evaporates quickly, making it ideal for use in cleaning fluids for computer monitor screens, as well as LCD screens, CDs and DVDs.

COATINGS

Owning a laptop and/or a smart phone has become the norm for most European citizens. These days, consumers often look for ways to customise their mobile devices, by buying a smart phone in a specific colour, for example, or by regularly changing its appearance with removable covers. These glossy coatings are produced using solvents such as methyl ethyl ketone or ethyl acetate. Solvents are key to creating the desired viscosity for the application of paints and coatings. Once applied, the solvent evaporates, allowing the resin and pigments to form a protective and decorative film, which dries rapidly.

MICROCHIPS

Microchips are the basis of all modern technological devices. Without them, laptops, smart phones or hands-free kits simply could not exist. Metal ions can cause short circuits that result in 'bad' microchips, which is why the microelectronics industry uses electronic-grade solvents. These solvents have extremely low levels of metal ions, and help to produce and clean micro-circuitry, while at the same time minimising microchip failures and short circuits. Dimethyl sulfoxide is used to dissolve organic compounds, which allows its use as a solvent for photoresist stripper formulations in microchip processes.

PRINTED CIRCUIT BOARD (PCB)

The printed circuit board (PCB) is a fundamental component of all electronic devices. It mechanically supports and electronically connects a device's electronic components. PCBs are made of thin copper foil, which ensures that they are able to conduct electricity. Extracting the copper from its ores involves a series of processes, some of which involve the use of solvents. In solvent extraction plants, aliphatic hydrocarbon solvents are used as carriers for chemical extractants, allowing for concentration and purification of the copper to the desired level.



HYDROCARBON SOLVENTS IN THE CONTEXT OF REACH AND CLP

Development of Categories and Naming Convention

The Hydrocarbon Solvents Producers Association (HSPA) has elaborated a category approach for hydrocarbon solvents to include similar physicochemical and toxicological properties for the dossier preparation of each category. A naming system has been developed to characterise hydrocarbon solvents as a substance, in order to properly identify similar substances in accordance with the REACH regulation.

The category approach has enabled groups of similar hydrocarbon solvents, which are mostly UVCBs (Unknown, Variable, Complex or Biological substances) with similar physical/chemical properties and toxicology, to be submitted within one dossier.

The naming convention for hydrocarbon solvents has many benefits for manufacturers and downstream users.

1. It allows classification and labelling of hydrocarbon solvents to be based on the known toxicology of a substance.
2. It sets a new standard in classification and labelling directly aligned with the substance.
3. It enables clear and specific user advice to be issued in the Chemical Safety Report (CSR).
4. It breaks the reliance on process descriptions and generic classifications that have been historically based on less refined petroleum streams and their associated toxicology.
5. It eliminates the need to justify 'non' classifications using notas in Europe.
6. Though it severs existing links with CAS (Chemical Abstract Services) numbers in Europe, these still remain outside the EU.



How Naming Convention and Classification works

To illustrate the naming convention and the classification process, an example using a typical hydrocarbon solvent, such as a low-aromatic medium-range distillate, is shown below.

CATEGORY 9: C14-C20 Aliphatics (<=2% Aromatics)

This category includes the following named hydrocarbons:

Hydrocarbons, C13-C18, n-alkanes, isoalkanes, cyclics, <2% aromatics
Hydrocarbons, C14-C18, n-alkanes, isoalkanes, cyclics, <2% aromatics
Hydrocarbons, C16-C20, n-alkanes, isoalkanes, cyclics, <2% aromatics
Hydrocarbons, C13-C16, isoalkanes, cyclics, <2% aromatics

By reviewing the toxicology for the named example below

Hydrocarbons, C14-C18, n-alkanes, isoalkanes, cyclics, <2% aromatics

the classification appears as follows (please see picture on the right).

CLASSIFICATION (1999/45)	Xn;R65, R66
CLASSIFICATION (EC) NO. 1272/2008	
Physical	Not classified.
Health	EUH066; Asp. Tox. 1 - H304
Environmental	Not classified.
LABEL IN ACCORDANCE WITH (EC) NO. 1272/2008	
CONTAINS	Hydrocarbons, C14-C18, n-alkanes, isoalkanes cyclics, <2% aromatics
HAZARD STATEMENTS	
EUH066	Repeated exposure may cause skin dryness or cracking.
H304	May be fatal swallowed and enters airways.
PRECAUTIONARY STATEMENTS	
P301	IF SWALLOWED:
P313	Get medical advice/attention.
P403	Store in a well-ventilated place.
SUPPLEMENTARY PRECAUTIONARY STATEMENTS	
P331	Do NOT induce vomiting.
ENVIRONMENT	
The product is not classified as hazardous to the environment according to regulation (EC) NO. 1272/2008.	

Working with Mixtures

Mixtures (previously known as preparations) of more than one solvent, or in combination with other materials, must be classified according to the rules in the CLP regulations using the classification of the substances (as shown on the SDS) to derive the appropriate final mixture classification. To ensure that downstream users have access to the appropriate information as soon as possible, it is the intention of the majority of HSPA members to rapidly begin the classification of hydrocarbon solvent mixtures, certainly well before the June 2015 deadline.

Guiding Principles

It is important to remember that each classification is based on the toxicology of the actual substance, the details of which can be found in the REACH dossier. HSPA and the HCSC (Hydrocarbon Solvents Consortium) have reviewed all of the common solvents within the categories and have reclassified all materials according to CLP rules.

This approach has shown that, for the majority of existing common hydrocarbon solvents, there are no changes to their classification when moving to CLP.

Conclusion

By developing a hydrocarbon naming convention, HSPA has ensured that the classification and labelling requirements of each substance are fully aligned with the toxicology of each material. This approach is entirely in line with the REACH process for submission of dossiers containing UVCB substances. All the hydrocarbon categories have been registered.

It should be noted, however, that outside Europe, the use of CAS numbers remains the standard method of reference for classification. For this reason, related CAS numbers will appear on Safety Data Sheets from your manufacturer.

ESIG AWARD WINNER EVENT IN NUREMBERG

ESIG Product Stewardship Award winner, CSC Jäklechemie, celebrates its achievements and underlines the importance of the responsible handling of solvents.

CSC Jäklechemie, a distributor of specialty and industrial chemicals located in Southern Germany, won the 7th ESIG Product Stewardship Award in 2009. A 122-employee family-owned company, CSC Jäklechemie impressed the jury with its ethical management of chemicals, its extraordinary social responsibility scheme and its comprehensive product stewardship programme along the value chain.

To celebrate its achievement and underline the importance of the responsible handling of solvents, CSC Jäklechemie invited customers, key representatives from the European solvents industry and German public authorities to an event, which was held close to Nuremberg (Germany) on October 13.

For the event, CSC Jäklechemie compiled a programme giving its customers all the latest information about European legislation on solvents, as well as knowledge about the activities of the solvents industry. While Dorothee Arns, ESIG Director General, and José Antonio Ruiz, ESIG Chairman, described the role, activities and offerings of ESIG and gave insights into the current regulatory affairs landscape, Prof. Dr. Aleksandar Jovanovic, CEO of the European Virtual Institute for Integrated Risk Management and Scientific Chairman of the European Technology Platform for Industrial Safety (ETPIS) in Brussels, highlighted the specific role and contribution of SMEs in the realm of industrial safety in Europe.

It was then the turn of Dr. Ronald Künneeth from the regional Chamber of Commerce and Industry (CCI) to enlighten the participants with regard to regional and national opportunities and challenges, describing the activities and working programme of the CCI with a special focus on energy, safety and environment. Last, but not least, the participants had the chance to take part in an extensive guided tour through CSC Jäklechemie's site in Nuremberg. The technical and innovative solutions implemented convinced all visitors of CSC Jäklechemie's commitment to the safe and responsible handling of solvents and clearly demonstrated why CSC Jäklechemie is the merited winner of the ESIG Product Stewardship Award 2009.



From right to left: José Antonio Ruiz, ESIG Chairman; Robert Späth, Jäklechemie Managing Director; Dorothee Arns, ESIG Director General; Prof. Dr. Aleksandar Jovanovic, European Technology Platform for Industrial Safety (ETPIS); Dr. Ronald Künneeth, Chamber of Commerce & Industry; Andreas Gryger, ESIG Communications Chairman.

...AND YOU COULD BE THE NEXT AWARD WINNER!

The next ESIG Product Stewardship Award will be held in 2011. Applicants from all European countries and any industry sector related to the production, supply, transport, storage and handling of solvents are welcome to submit their candidatures. The application process will be launched on January 17, 2011. As of that date, details will be available on the ESIG website www.esig.org, including guidance on how to apply, sample applications from the recent winners and access to the short application form.

We look forward to receiving your applications and to rewarding those companies that have made outstanding improvements in the use of solvents in a responsible and sustainable manner, while ensuring that solvents can meet the ever-changing requirements of today's and tomorrow's products.

The winner will be invited to a glittering European Award ceremony in the autumn of 2011 and will receive a high level of promotion on a European as well as on a local level.

It's very easy to apply. **This time** could be your time!

PRESENTING THE ESIG PRODUCT STEWARDSHIP AWARD 'DECK OF CARDS'

ESIG keeps expanding its broad range of communication materials to help solvent users in Europe and beyond. The latest addition to the ESIG catalogue is the ESIG Product Stewardship Award 'Deck of Cards'.

Building on the aim of showcasing and rewarding excellence and continuous improvement in the use of solvents, this 'Deck of Cards' presents the achievements of the latest winners of the Award, but also includes all winners to date. It provides a series of snapshots of the winning companies, as they were at the time they

received the Award. Card after card, ESIG takes you on a journey around Europe, demonstrating that excellence is not a matter of size or economic resources, as these companies are mostly small and medium enterprises with just one thing in common: an exceptional commitment to sustainability and responsibility.

The ESIG Product Stewardship Award 'Deck of Cards' is in English and can be downloaded from the ESIG website at www.esig.org. Hard copies can be ordered free of charge by sending an e-mail to esig@cefic.be.



SPECIFIC ENVIRONMENTAL RELEASE CATEGORIES (SPERCS) AND FACT SHEETS FOR SOLVENTS READY TO USE



In summer 2010, in the previous edition of 'Solutions', ESIG reported on its 'GES library', available for use and download from the ESIG website. It contains 22 Generic Exposure Scenarios (GES) to cover human exposure to solvents in line with REACH obligations, but not environmental exposure. Over the last couple of months, an ESIG sub-team – seconded by several downstream user associations – has developed a complementary tool to help all solvent users comply with their obligation to build Environmental Exposure Scenarios in addition to those referring to workers and consumers.

The environmental aspects of REACH exposure scenarios are extremely challenging: the Chemical Safety Assessment requires a detailed description of the chemical use conditions during industrial operations to measure substance fractions lost during the process in the three environmental compartments, and the efficiency of the Risk Management Measures (RMM) to avoid hazards.

The tool, a look-up tableau with the title 'SPERCS' in the GES section under REACH on www.esig.org/en/regulatory-information/REACH/ges-library/ges-spercs-2, provides 33 concrete fact sheet models applying to the different solvent uses. They define how much of a substance is typically used per type of activity, which fraction of the substance is released into water, air and soil, and which RMM are typically employed to reduce emissions.

In full alignment with Cefic's proposals, the SPERCS for solvents were developed on the basis of realistic data and assumptions

for particular uses, instead of applying a default conservative set of exposure conditions. They are closely linked to the known good industrial practices performed for environmental safety assessments.

The 33 SPERCS fact sheets cover all 22 ESIG Generic Exposure Scenarios (GES). In some cases, one or two fact sheets may be relevant for one GES, depending on whether the respective solvents are used for industrial activities and/or for wide dispersive uses, including professionals and consumers.

The entire section is constantly updated. An automatic notification tool, to which all interested readers can subscribe on the ESIG homepage, will immediately alert users to any changes to the content.

THE INTERNATIONAL YEAR OF CHEMISTRY 2011

2011 will be the International Year of Chemistry (IYC 2011). It also marks the 100th anniversary of the Nobel Prize awarded to the Polish physicist and chemist Marie Curie.



The IYC 2011 is an initiative of IUPAC, the International Union of Pure and Applied Chemistry, and of UNESCO, the United Nations Educational, Scientific and Cultural Organisation. Under the theme 'Chemistry – our life, our future', the aim of the IYC 2011 is to celebrate the contributions of chemistry to the well-being of humankind. A wide range of activities will be organised all over the world, including lectures, exhibitions and hands-on experiments, which will help to better understand how important chemistry is in various aspects of our life. In particular, solvents have significantly changed modern living; without them, many of the products we use and rely on would not perform to the standards we demand today.

To know more about the IYC 2011, please visit www.chemistry2011.org.



HAPPY HOLIDAYS

ESIG wishes all Solutions readers **Merry Christmas and Happy New Year 2011**

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