

## HSM - Hazardous Substance Management based on Microsoft Dynamics™ NAV (Navision)

The *Hazardous Substance Management* or *GSM* provides a specific solution for the management of hazardous substances and dangerous goods. This software - based on *Microsoft Dynamics™ NAV (Navision)* - contains all the functionality and data required for a facility's product safety and safe transport related processes, especially important for enterprises highly dynamical in product development.

Since *HSM* is fully integrated into *Microsoft Dynamics™ NAV (Navision)* its data and objects are located in the NAV database (*SQL Server*). All operating processes can be mapped seamlessly within the system. The user interface <sup>1</sup> completely corresponds to the NAV standards, of course.

### Core functionality:

- Substance database
- Multilingual phrase catalogue
- Formulation management
- Flexible design of properties and views
- Report views (Safety Data Sheet, workplace instructions, technical data sheet, declarations of conformity etc.) predefined and/or user configurable
- Calculation of classification and labelling
- Dangerous goods classification and processing (transport documents ADR, IMO, IATA)
- Configurable flowchart processor for further evaluations and calculations
- Research module for database wide evaluations
- Automatical Safety Data Sheet dispatch
- Region related versioning management
- Provision of data for label printing

### Experience

Long standing experience in the development of information systems and with the internal processes of the process industry as well as precise knowledge of the legislation on handling and transport of hazardous substances produced a piece of software which can be adapted to various demands thanks to its modular and parameter controlled design.

### Integration

*HSM* is integrated into industry solutions for the chemical industry as well as for pharmaceuticals, cosmetics, food and food additives. The functions and data of the *HSM* module are used by production and storage up to shipment.

Integration means that all data are available throughout the system anytime. Thus double input and access to data, which are not up-to-date, are avoided. This leads to significantly better reliability of all product safety related processes and a considerably lower expenditure of time.

<sup>1</sup> The screenshots shown here are taken from the NAV version NAV 5 except for Figures 12 and 13.1, which show the Unicode-capable version NAV 2013.

So for example recipes (= formulations) are entered only once and are then available for the calculations and reports required by hazardous substance legislation, for production processes, and for internal calculation. In shipment transaction the legally required documents like Safety Data Sheets (SDSs) and transport documents are compiled and created for all necessary languages. Dispatched SDSs are archived and logged with customer reference.

Information about reports created for a customer is directly accessible from the Customer card. Likewise properties and reports of a certain item may be called directly from the Item card.

To every delivery note you may get information on Safety Data Sheets, accompanying transport documents etc.

### **Flexibility**

In the overall conception flexibility is maintained down to the level of data structures. The easy adaptability of the system to the enterprises' demands guarantees that peculiarities resulting from changing business requirements can be met. Adaptation to the permanently changing laws, directives, ordinances and regulations may be carried out quickly and without big expenditures. This means security for your investment, because *HSM* will keep pace with the growth of your enterprise and with the requirements of the legislator as well.

With *HSM* you have the possibility to map structures and properties of complex contents of information far beyond the subjects mentioned here.

Flexibility of a program also means, that new requirements may implemented not necessarily by permanent adaptation of the software as such, but also by a change in data design.

Thus one can adapt and configure properties, data input views and reports. The FCC (Flow Chart Processor) even allows the configuration of one's own calculations and evaluations.

### **Safety Data Sheet**

When creating a new sales order in *NAV*, the languages necessary for the destination region are determined, and a regional (and multilingual if necessary) version of the Safety Data Sheet is created, printed and stored. The date of shipment of the item and its assigned SDS will be logged for monitoring purposes - in accordance with the 12 Months Rule establishing the commitment of shipping a new SDS on relevant changes.

**HSM Report Creation**

General Batch

Substance No. . . . . 4711-A ↑

Viewcode . . . . . SDS ↑

Language Code . . . . . FR ↑

Region Code . . . . . CH ↑

Address Code . . . . . PSS ↑

Fileformat . . . . . RTF ▾

Show document . . . . ☒

Create Report Help

Figure 1: Report creation (Safety Data Sheet for Switzerland in French)

Fiche de données de sécurité conforme à règlement (CE) no 1907/2006

Nom commercial: Ecoplus+++

Número de la matière: 4711-A

Version: 5/CH

Date de révision: 23.05.13

Replaces Version: 4/CH

Date d'impression: 23.05.13

**1. Identification de la substance/du mélange et de la société/l'entreprise**

**1.1. Identificateur de produit**  
Ecoplus+++

**1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées**  
Utilisations identifiées  
SU3 Utilisations industrielles: Utilisations de substances en tant qu'etelles ou en préparations sur sites industriels  
PC9a Revêtements et peintures, solvants, diluants  
PROC10 Application au rouleau ou au pinceau

**1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité**  
Adresse  
Prosisoft GmbH  
Otto-von-Guericke-Ring3  
D-65205 Wiesbaden  
No. de téléphone: +49 6122 7268 550  
No. Fax: +49 6122 7268 551  
Service émetteur / téléphone: Service de sécurité des produits  
Adresse email de la personne responsable pour cette FDS: info@prosisoft.de

**1.4. Numéro d'appel d'urgence**  
Pendant les heures de bureau: +49 6122 7268 999  
Centre Suisse d'Information Toxicologique: 145

**2. Identification des dangers**

**2.1. Classification de la substance ou du mélange**  
Classification (règlement (CE) no 1272/2008)  
Classification (règlement (CE) no 1272/2008)  
Flam. Liq. 3 H226  
Muta. 1B H340  
Carc. 1B H350  
Repr. 1B H360D  
STOT SE 3 H336

Classification selon les Directives CE  
Classification  
R10  
R66  
R67  
Carc. Cat.2, R45  
Muta. Cat.2, R45

**2.2. Éléments d'étiquetage**  
Etiquetage selon le règlement (CE) no 1272/2008  
Pictogrammes de danger

**Mention d'avertissement**  
Danger

**Mentions de danger**  
H226 Liquide et vapeurs inflammables.  
H340 Peut induire des anomalies génétiques.  
H350 Peut provoquer le cancer.  
H360D Peut nuire au fœtus.  
H336 Peut provoquer somnolence ou vertiges.

**Conseils de prudence**  
P210 Tenir à l'écart de la chaleur/des étincelles/des flammes nues/des surfaces chaudes. - Ne pas fumer.  
P243 Prendre des mesures de précaution contre les décharges électrostatiques.  
P281 Eviter de respirer les poussières/fumées/gaz/brouillards/vapeurs/aérosols.  
P281 Utiliser l'équipement de protection individuel requis.  
P303 EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux):  
P363 Rincer la peau à l'eau/se doucher.  
P304 EN CAS D'INHALATION:  
P340 Transporter la victime à l'extérieur et la maintenir au repos dans une position où elle peut confortablement respirer.  
P308 EN CAS D'EXPOSITION prouvée ou suspectée:  
P313 Consulter un médecin.  
P403 Stocker dans un endroit bien ventilé.  
P405 Garder sous clef.  
P501 Eliminer le contenu/récipient conformément à la réglementation locale.

**Hazardous component(s) to be indicated on label (Regulation (EC) No. 1272/2008)**  
contient Solvent naphtha (Petroleum), light arom.; low boiling point Naphtha - unspecified; Solvent naphtha (Petroleum), light arom.; low boiling point Naphtha - unspecified; 2-Methoxypropanol; n-Butyl acetate; Propan-2-ol

**Étiquetage selon les Directives CE 67/548/CEE et 1999/45/CE**  
Le produit est classé et étiqueté conformément aux Directives communautaires et réglementations nationales en vigueur.

**Symboles de danger**  
Toxicité

**Phrase(s) de risque**  
46 Peut provoquer le cancer.  
46 Peut provoquer des altérations génétiques héréditaires.  
10 Inflammable.  
66 L'exposition répétée peut provoquer dessèchement ou gerçures de la peau.  
67 L'inhalation de vapeurs peut provoquer somnolence et vertiges.

**Phrase(s) S**  
53 Eviter l'exposition - se procurer des instructions spéciales avant l'utilisation.  
60 Eliminer le produit et son récipient comme un déchet dangereux.

**Composants déterminant le danger devant figurer sur l'étiquette**  
contient Solvent naphtha (Petroleum), light arom.; low boiling point Naphtha - unspecified

**Étiquetage exceptionnel pour préparations spéciales**  
"Réservé aux utilisateurs professionnels"

Page 1(15)

Page 2(15)

Figure 2: Report page view (Safety Data Sheet as RTF document)

## Automatical Safety Data Sheet dispatch

Via processing a stack all Safety Data Sheets for a certain customer including a cover sheet may be created and mailed. By this procedure you can provide your customers with all necessary SDSs periodically. In *HSM* the prerequisites for electronic mailings are already given too.

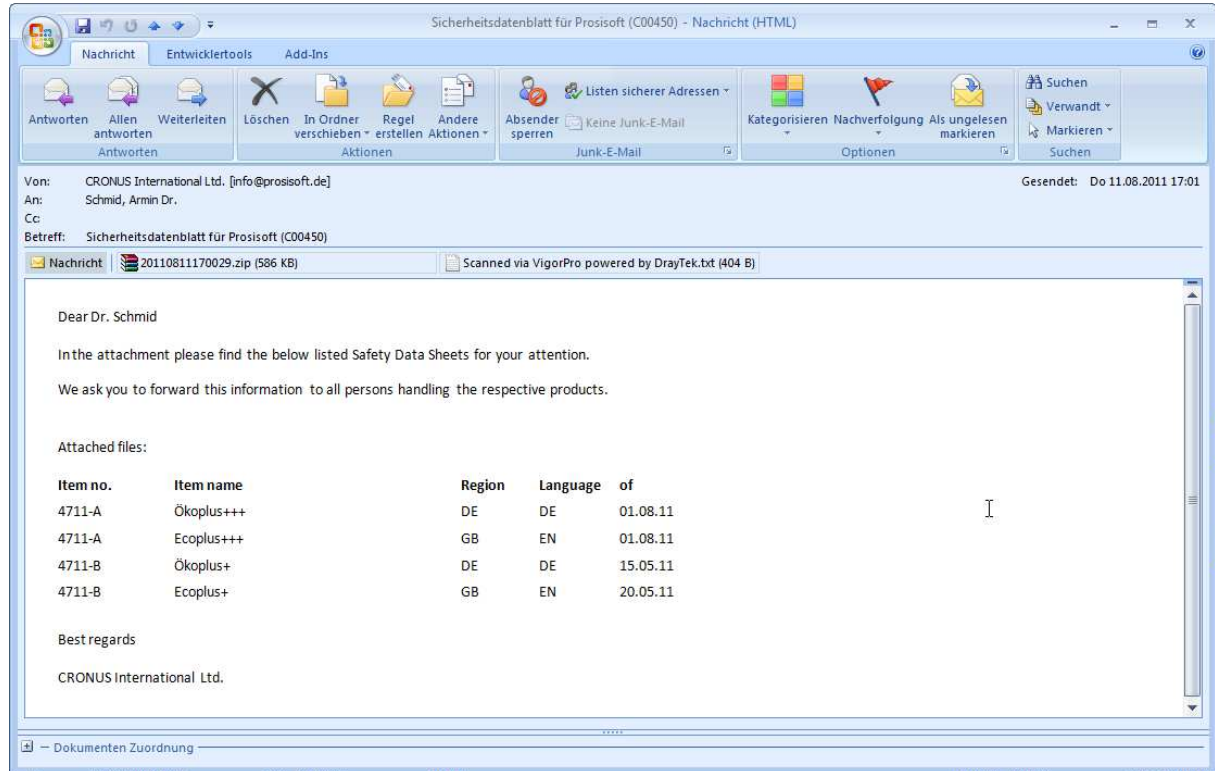


Figure 3: Automatic e-mail SDS distribution (Cover letter with attached zip file)

## Substance data

In *HSM* substance data of chemical substances or mixtures, raw materials, intermediates and products is entered and maintained. This data form the basic pool of information and is accessed by various functions. For managing this information the module offers a number of comprehensive views and evaluations.

Several items of the *NAV* ERP part may be assigned to a certain substance entry whose chemical characterisation is located in the substance data base. The chemical substance relevant formulation is taken over. Based on this information the classification of the related mixtures can be determined.

Figure 4: Substance card

## Formulations

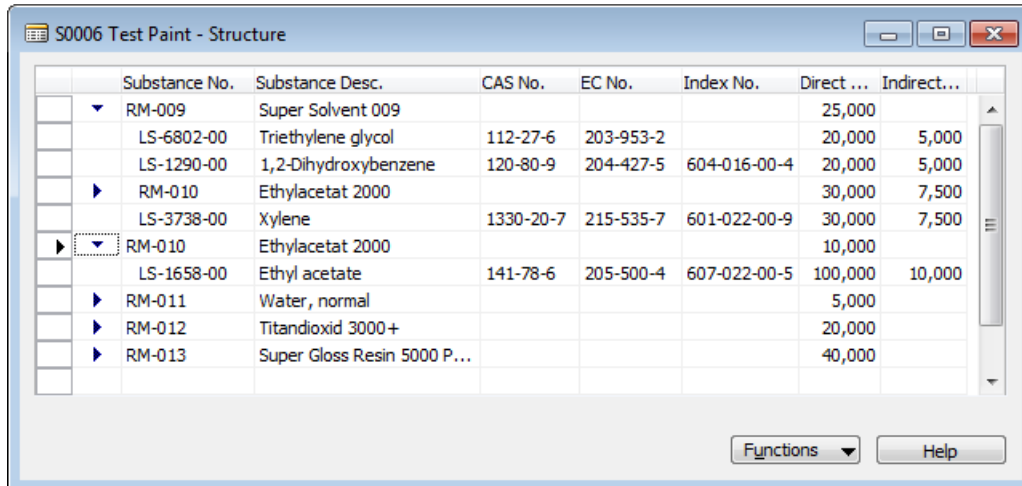
In *HSM* the composition of product mixtures is stored in a formulation, which normally results from the raw materials contained in the production BOM (bill of materials).

Type	No.	Substance Desc.	Share %
Substance	RM-009	Super Solvent 009	25,000
Substance	RM-010	Ethylacetat 2000	10,000
Substance	RM-011	Water, normal	5,000
Substance	RM-012	Titandioxid 3000+	20,000
Substance	RM-013	Super Gloss Resin 5000 Premix	40,000
Total			100,000

Figure 5: Formulation

## Formulation structure and ingredients

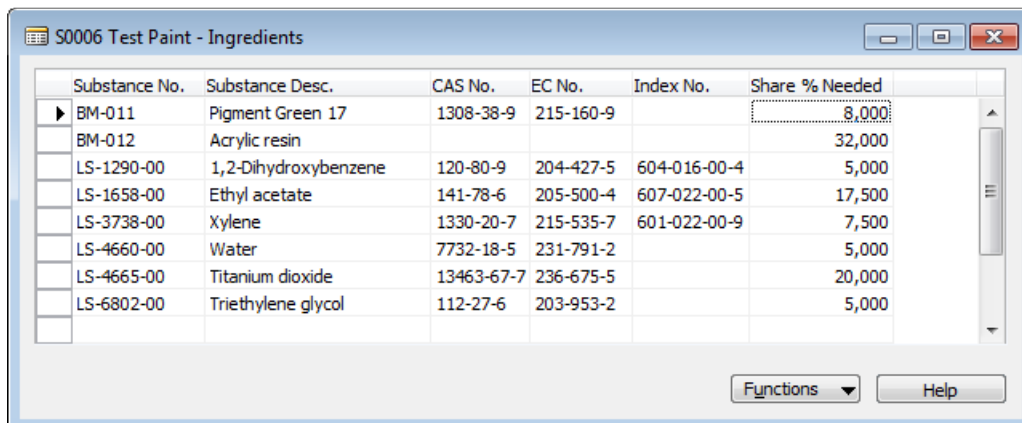
Since its ingredients often consist of other substance entries available in the system, the formulation can be displayed resolved on several levels, of course. Multi-staged formulations are displayed in a tree structure with the direct und indirect percentages.



	Substance No.	Substance Desc.	CAS No.	EC No.	Index No.	Direct ...	Indirect...
▼	RM-009	Super Solvent 009				25,000	
	LS-6802-00	Triethylene glycol	112-27-6	203-953-2		20,000	5,000
	LS-1290-00	1,2-Dihydroxybenzene	120-80-9	204-427-5	604-016-00-4	20,000	5,000
▶	RM-010	Ethylacetat 2000				30,000	7,500
	LS-3738-00	Xylene	1330-20-7	215-535-7	601-022-00-9	30,000	7,500
▶	RM-010	Ethylacetat 2000				10,000	
	LS-1658-00	Ethyl acetate	141-78-6	205-500-4	607-022-00-5	100,000	10,000
▶	RM-011	Water, normal				5,000	
▶	RM-012	Titandioxid 3000+				20,000	
▶	RM-013	Super Gloss Resin 5000 P...				40,000	

Figure 6: Formulation structure

In a complex formulation a basic chemical substance may be contained in different directly added ingredients. In order to determine the content of a substance in the entire formulation the formulation can be displayed completely resolved, as shown below. This listing of all basic substances forms the basis of calculations.



	Substance No.	Substance Desc.	CAS No.	EC No.	Index No.	Share % Needed
▶	BM-011	Pigment Green 17	1308-38-9	215-160-9		8,000
	BM-012	Acrylic resin				32,000
	LS-1290-00	1,2-Dihydroxybenzene	120-80-9	204-427-5	604-016-00-4	5,000
	LS-1658-00	Ethyl acetate	141-78-6	205-500-4	607-022-00-5	17,500
	LS-3738-00	Xylene	1330-20-7	215-535-7	601-022-00-9	7,500
	LS-4660-00	Water	7732-18-5	231-791-2		5,000
	LS-4665-00	Titanium dioxide	13463-67-7	236-675-5		20,000
	LS-6802-00	Triethylene glycol	112-27-6	203-953-2		5,000

Figure 7: Ingredients

### Calculation of classification and labelling

Manually calculating the classification and labeling not only means high expenditure of time, but also requires the current data and legally prescribed regulations anytime.

*HSM* contains a program module which runs these calculations. From the product's ingredients and its properties the following items (and some other things) will be derived and stored: classification and labelling according to hazardous substances legislation, references to workplace exposure limits, hazardous ingredients to be mentioned on the Safety Data Sheet and label data.

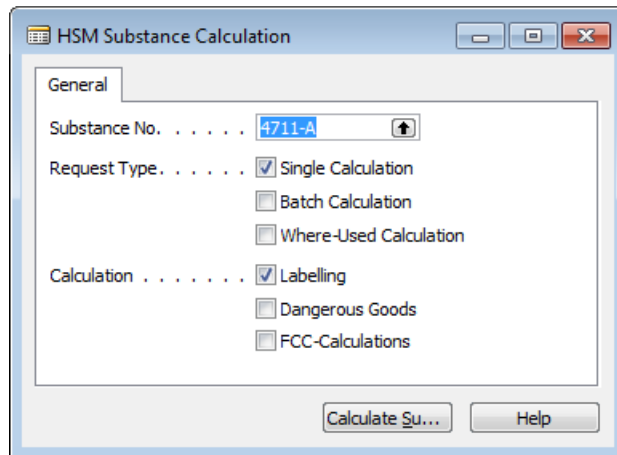


Figure 8: Calculation functions

The calculated results are used in the prepared reports. Because of changes in legislation, e.g. in the classification of ingredients, or a changed formulation the results of a new calculation may differ from the results of the previous one. The deviations are highlighted in the display of the entire result. The column Action indicates what will happen when the result is written back into the database.

E... Property Description	Inst...	Relevant T...	Attribute Description	Value	Text	Action
▼ EU classification	3/4	✓	R.. Hazard description	S150100090	Xi	Skip
		✓	R.. R-phrase	S150300430	36	
		✓	R.. Hazard description	S150100090	Xi	
		✓	R.. R-phrase	S150300430	36	
▼ EU classification	4/4	✓	R.. R-phrase	S150300020	10	Delete
▼ Hazard symbols	1/1	✓				Modify
		✓	R.. Hazard description	S150100030	F	
		✓	R.. Hazard description	S150100090	Xi	
		✓	R.. Hazard description	S150100090	Xi	
▶ ▼ R phrases	1/1	✓				Modify
		✓	R.. Phrase	S150300030	11	
		✓	R.. Phrase	S150300430	36	
		✓	R.. Phrase	S150301250	67	
		✓	R.. Phrase	S150300020	10	
		✓	R.. Phrase	S150300430	36	
		✓	R.. Phrase	S150301250	67	
▼ S phrases	1/1	✓				Keep
		✓	R.. Phrase	S150401470	9	
		✓	R.. Phrase	S150400150	16	

Figure 9: Display of calculation results

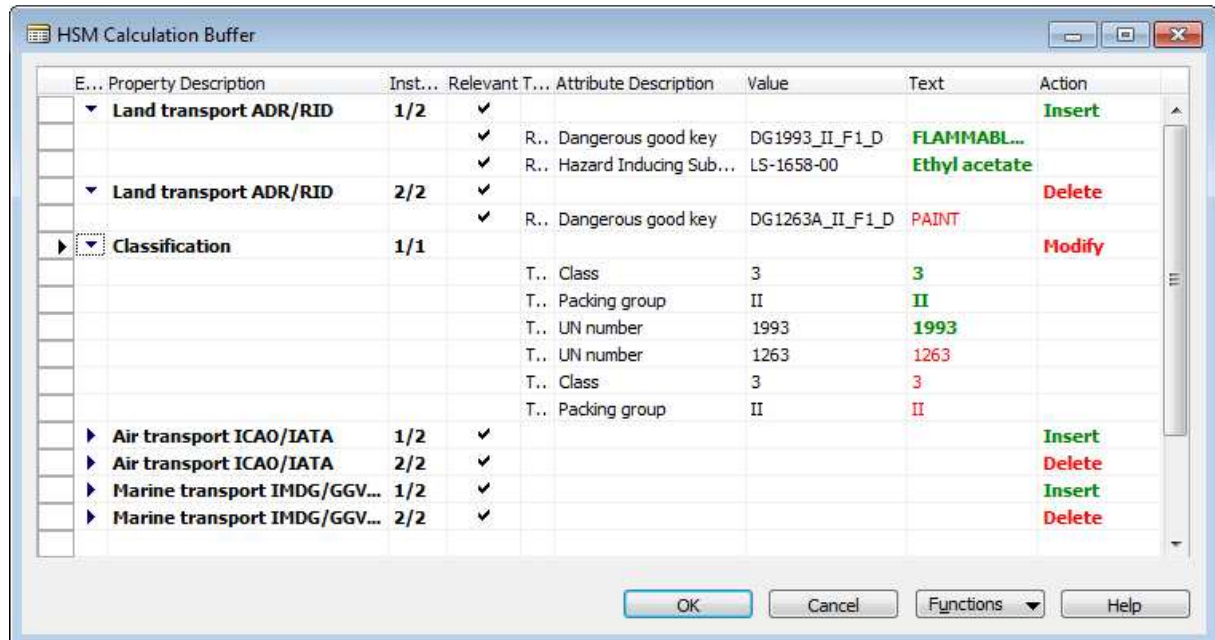
After acceptance it is still possible to modify calculation results in the property masks, e.g. by appending additional S-phrases. Company specific commitments can be met this way.

Apart from substance data, the calculations are based on numerous rule tables, which are looked up by the calculation functions. This allows quick adaptations and modifications of limit values and dependencies implemented because of legal prescriptions.



## Dangerous goods classification

The classification of dangerous goods is based on a compilation of rules derived from ADR, IMDG Code and IATA. Based on transport data and additional physical and chemical data of the ingredients the classification of the product is calculated with respect to land-, sea-, and air transport.



E...	Property Description	Inst...	Relevant T...	Attribute Description	Value	Text	Action
▼	Land transport ADR/RID	1/2	✓				Insert
			✓	R.. Dangerous good key	DG1993_II_F1_D	FLAMMABL...	
			✓	R.. Hazard Inducing Sub...	LS-1658-00	Ethyl acetate	
▼	Land transport ADR/RID	2/2	✓				Delete
			✓	R.. Dangerous good key	DG1263A_II_F1_D	PAINT	
▶ ▼	Classification	1/1					Modify
				T.. Class	3	3	
				T.. Packing group	II	II	
				T.. UN number	1993	1993	
				T.. UN number	1263	1263	
				T.. Class	3	3	
				T.. Packing group	II	II	
▶	Air transport ICAO/IATA	1/2	✓				Insert
▶	Air transport ICAO/IATA	2/2	✓				Delete
▶	Marine transport IMDG/GGV...	1/2	✓				Insert
▶	Marine transport IMDG/GGV...	2/2	✓				Delete

Figure 10: Display of dangerous goods classification

The result contains complete classification profiles for each dangerous goods item, consisting of UN Number, Class, Packing group, Proper shipping name, quantity limits for the different transport modes. The determination of the classification profiles is based on the lists of dangerous goods as provided by the said regulations.

Based on the dangerous goods classification in the downstream shipment process exempted quantities and transport prohibitions for the different modes of transport can be determined. Starting from the classification profile the accompanying transport papers are created. These are the Dangerous goods transport document according to ADR, IMO- and IATA Declaration.





Figure 11: Call of transport documents from Posted Sales Shipment card

### Research module: Hazardous substance inventory

Enterprises are obliged to keep an inventory of all hazardous substances handled in the plant. With the HSM Research module the listings for products, intermediates and raw materials with the information prescribed by the legislator, such as hazardous substance name, classification or dangerous properties, volumes in the plant, working areas, where the hazardous substance is handled, etc. can be created.

Because of its integration into the ERP system *HSM* can generate this information on a daily basis at the push of a button. Of course evaluations related to the "Seveso II" Directive, for the REACH registration etc. are possible as well.

### Safety Data Sheet View

The most important data collection view for product safety related items is called "EU Safety Data Sheet". Here you can enter data and assign phrases (text modules) to the substances' properties, which are arranged corresponding to the 16 main chapters of a Safety Data Sheet. Chapters, subchapters and the single input items can be modified and extended by the user.

The structure tree shown in Figure 12 can be supplemented or modified anytime. If one e.g. needs additional chapters within a certain view or if one needs an entirely new view, a modification of the software is not necessary. Thanks to this flexibility the user can meet all future challenges.

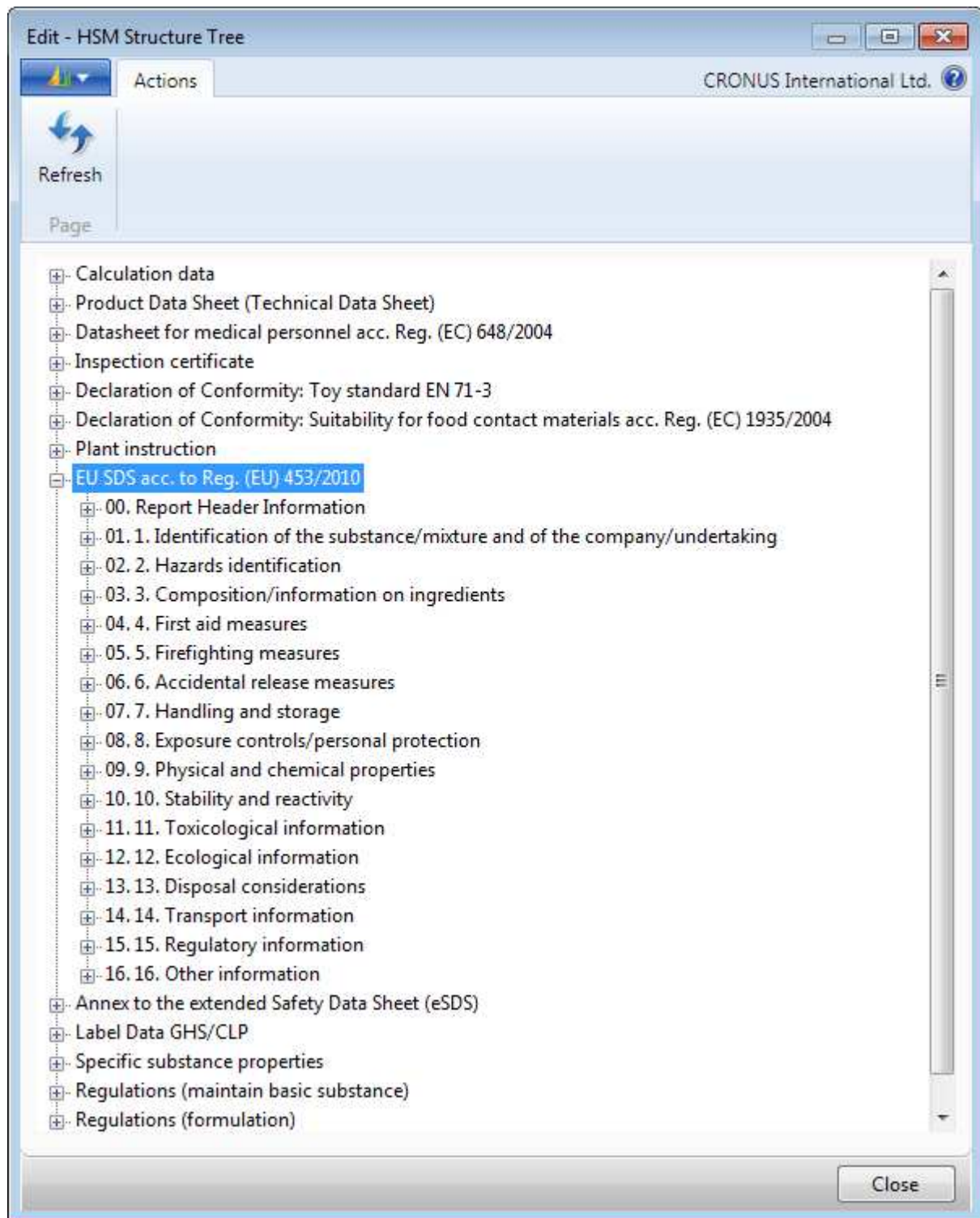


Figure 12: Structure tree for entering properties (with a selection of important views)

### Calculation Data View

Via this data collection view the basic data necessary for the calculation of hazardous substance classification and labeling and dangerous goods classification can be entered. After calculation the most important chapters of the SDS are already filled in.

### Regulations views

Via the views Regulations (maintain basic substance) and Regulations (formulation) the most fundamental data of listed and basic substances and mixtures can be entered.

### Further views

Easy handling and high flexibility of the system allow the definition of further user- or workplace-related views, of which some are already pre-defined:

- Workplace instruction (Plant instruction)
- Data sheets according to the Detergents Regulation
- Data provision for label printing
- US Material Safety Data Sheet

Additional calculation (HMIS, NFPA) and evaluation functions, e.g. inventory list check, i.e. information on whether e.g. all ingredients belong to the TSCA Inventory or whether none of the ingredients appears on ECHA's SVHC Candidate List are easily to be configured or already exist.

Self defined views and reports in accordance with company specific requirements, e.g. product descriptions (technical data sheets), instructions for use, declarations of conformity, certificates of analysis etc. are to be mentioned here as well.

### Logistics / Shipment processing

In the course of shipment processing, all documents (Transport document, IMO- and/or IATA Declaration) are automatically requested, created and printed. The necessary substance and dangerous goods data are looked up directly in the substance database and issued on the delivery note.

### Substance data

An important resource of a hazardous substance management system with its variety of functions is formed by legislation data, lists and regulations. The basic data, which are necessary especially for the calculation functions and the creation of MSDSs are collected and maintained in *HSM*. A collection of basic data is provided by *Prosisoft*:

- Substance data according to Annex I of EC Directive 67/548/EEC resp. Annex VI of Regulation (EC) 1272/2008 (CLP)
- Workplace exposure limits for several European countries and the USA
- Lists of dangerous goods according to ADR, IMDG, IATA
- German List of water hazardous substances (WGK)
- VOC-substances (Switzerland, EU, Decopaint Directive)
- Inventory lists like EINECS, TSCA, DSL/NDL
- etc.

#### • Text modules (phrases)

- The output of documents can be made in numerous languages (currently 26 including Chinese). The standard system is delivered with phrases in German and English. Further languages may be added as single languages or as language packages. This makes all documents automatically available in the newly added languages.
- 
- By default, the user interface itself is available in German and English; here, too, other languages can be added.
- 
- The database may also be added anytime by customer specific phrases. By arrangement with *Prosisoft* it is possible to transfer such phrases into the standard catalogue (with corresponding translations).

S160300010 This information is based on our present state of knowledge. However, it should ...

General History

Code . . . . . S160300010

Phrase Group Code . . . S1603

Text . . . . . This information is based on our prese...

Text 2 . . . . .

Phrase Symbol . . . . .

Languagefilter . . . . . EN

Source Type . . . . . PSS

Lan...	Text
BG	ÓÝÞžÖ ±Ö ßÓÞ-Óž ÝÓ ±ÖÖÓÝž ±±žÝÞÖ ÝÓ ÝÓÞžÖ ÞÝÓÝÞ Þ-Þž. Þ±žžÞÓ ßÖÞ-Ó±Ý±ž-Þ
CN	672C;4FE1;606F;5EFA;7ACB;5728;6211;4EEC;73B0;5728;7684;77E5;8BC6;57FA;7840;4E0A;3002;56E0;80
CS	šdaje řdpovřdajř dneřnřmu stavu nařich znalostř a poznatkř. Bezpeřnostnř list popisuje pořadavky pro zř
DA	Oplysningerne er baseret př vor seneste viden. De skal beskrive vore produkter med henblik př sikkerhedskra
DE	Die Angaben střtzen sich auf den heutigen Stand unserer Kenntnisse und Erfahrungen. Das Sicherheitsdatenl
EL	Èß ¼¼"Ú_Öß Öß¼¼ Ý¼¼Ú ¼¼Úž ¼¼ÞÖ±ÚÝ;ž ÖÝř¼ÖÚž ÚßÚ Öý-ÖÚ±Öž. È" ÖÚÖÚ" ¼¼¼"Ú_Ö Ýß¼¼ßÚÖ
EN	This information is based on our present state of knowledge. However, it should not constitute a guarantee fr

Phrase Help

Figure 13: Phrase card with translations for Phrase S160300010

For editing phrase translations in character sets that do not correspond to the default code page of the system, the Prosisoft Phrase Keyboard (see Figure 14) can be used. In this tool, all the fonts on the screen<sup>2</sup> are displayed correctly and can be edited using an on-screen keyboard. User-specific phrases can be taken over from the appropriate source documents without additional conversion steps into the NAV database.

<sup>2</sup> In the generated documents, the different character sets are displayed correctly anyway, of course!

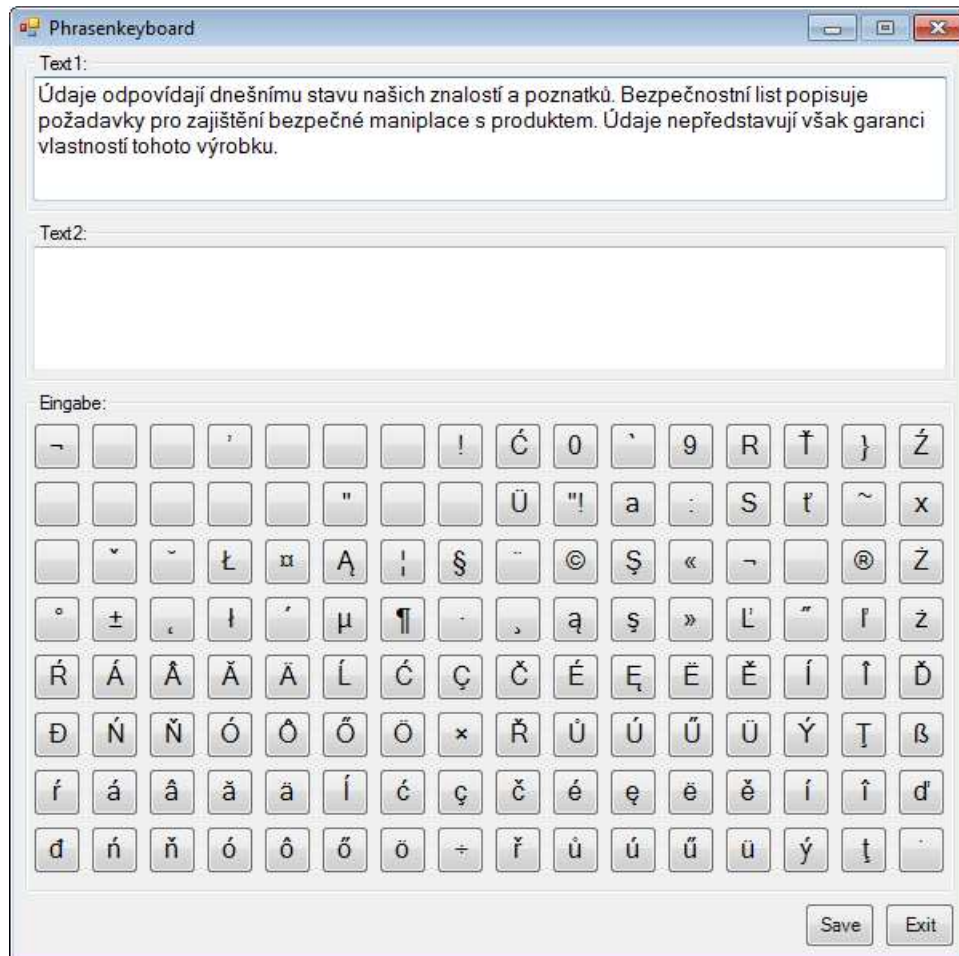


Figure 14: Phrase Keyboard for Czech (CS)

**Remark:** The new NAV version NAV 2013 (NAV 7) is now Unicode-enabled so that conversions are no longer necessary, and phrase translations with different character sets can be displayed correctly on the screen even if they appear in a list.

An **HSM version for NAV 2013 is already available** (see the following figure).



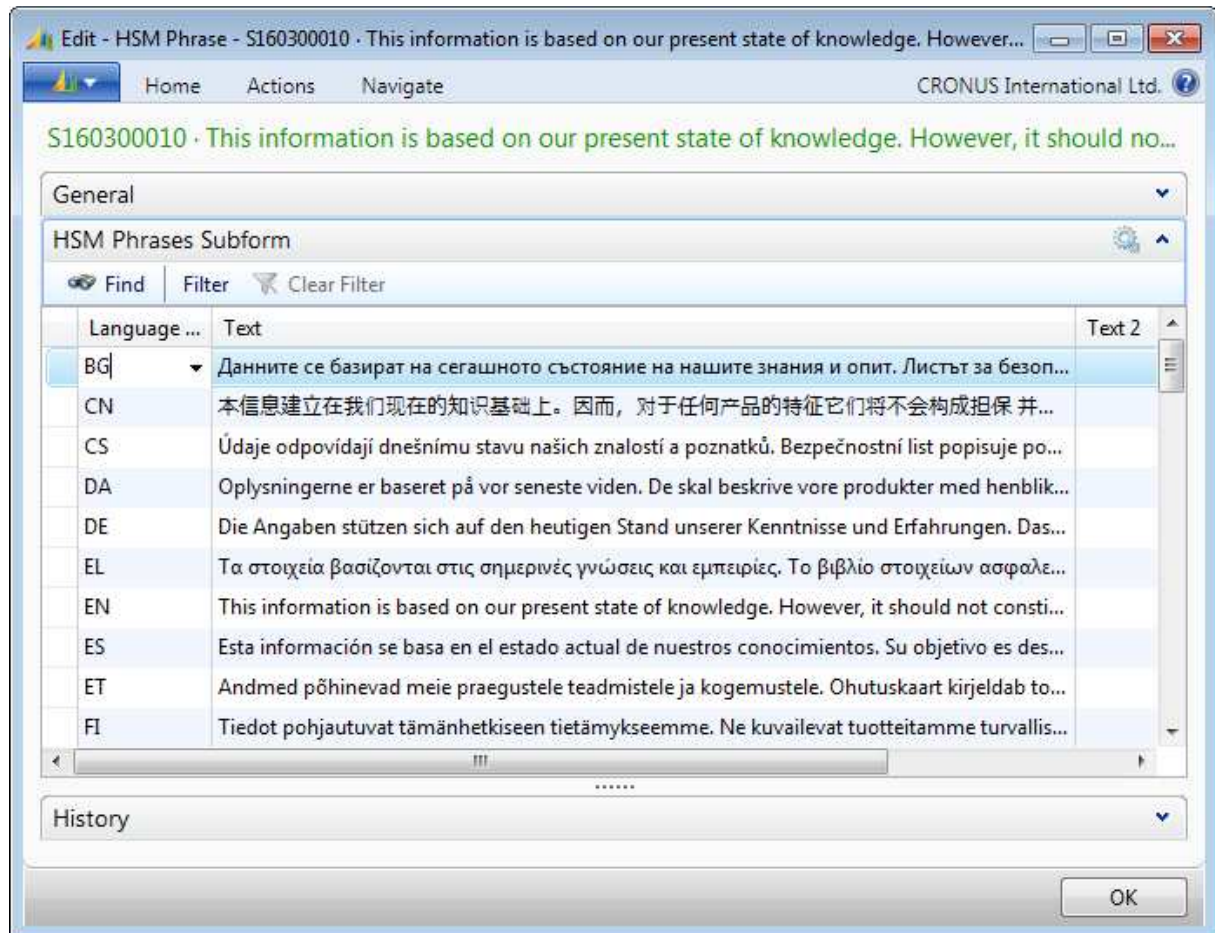


Figure 13.1: Phrase card in HSM for NAV 2013

### Version ing

HSM contains a sophisticated version control for the created report documents. This function keeps you informed about changes of the documents anytime and provides access to older versions as well.

Via the tab functions and the menu function "History" information like date of creation, date of change, and the name of the user who made changes can be displayed. In HSM version control can be carried out for each regional version. A version not yet finished can be edited until it gets the status "Released". Old versions are stored of course.

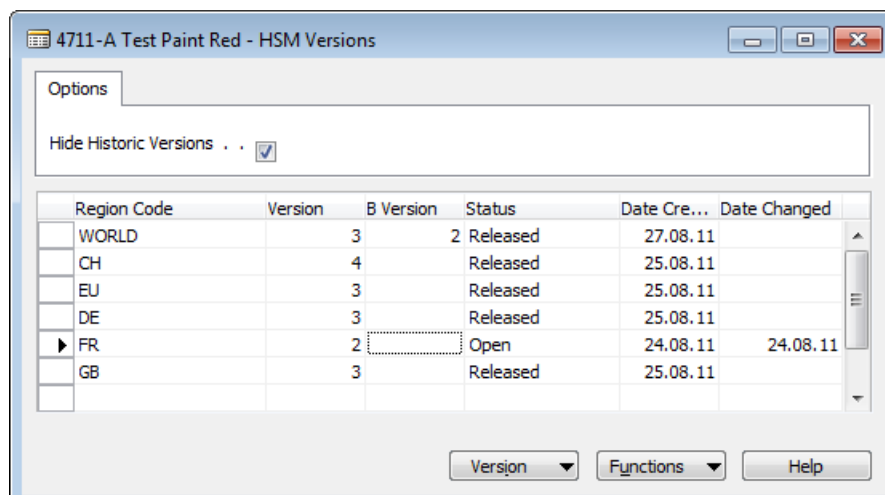


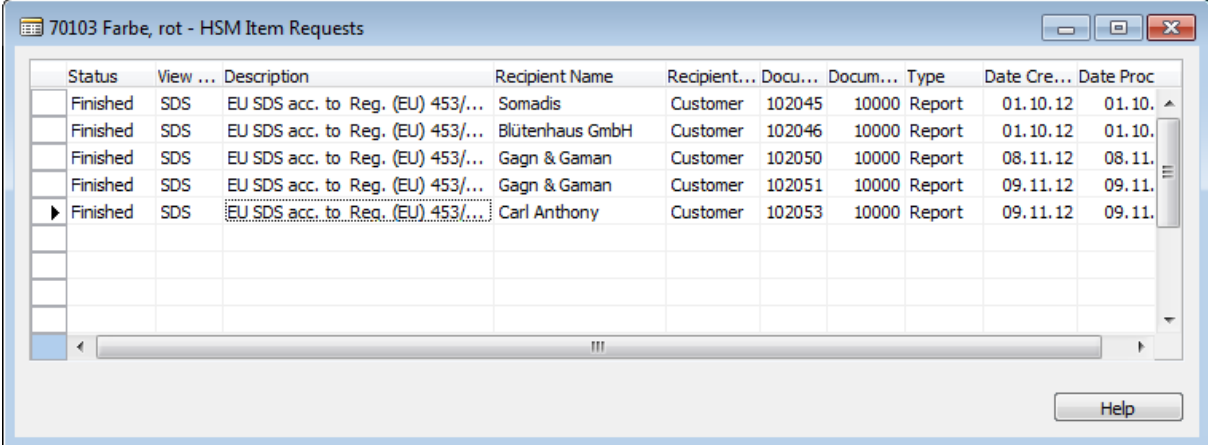
Figure 15: Versions

## Requests

For operations such as the mixture calculations, SDS generation and SDS dispatch requests are written into an *HSM* table. The processing of the requests is logged.

Thus, with *HSM* one can always track and prove

- which customer has actually got which report, for example Safety Data Sheets (SDS view code), for a particular item (status: Finished) or
- Which reports for which items where sent to a certain customer.



The screenshot shows a software window titled "70103 Farbe, rot - HSM Item Requests". It contains a table with the following columns: Status, View ..., Description, Recipient Name, Recipient..., Docu..., Docum..., Type, Date Cre..., and Date Proc. The table lists five rows of "Finished" status requests for "EU SDS acc. to Reg. (EU) 453/..." sent to various customers. The fifth row is selected.

Status	View ...	Description	Recipient Name	Recipient...	Docu...	Docum...	Type	Date Cre...	Date Proc
Finished	SDS	EU SDS acc. to Reg. (EU) 453/...	Somadis	Customer	102045	10000	Report	01.10.12	01.10.
Finished	SDS	EU SDS acc. to Reg. (EU) 453/...	Blütenhaus GmbH	Customer	102046	10000	Report	01.10.12	01.10.
Finished	SDS	EU SDS acc. to Reg. (EU) 453/...	Gagn & Gaman	Customer	102050	10000	Report	08.11.12	08.11.
Finished	SDS	EU SDS acc. to Reg. (EU) 453/...	Gagn & Gaman	Customer	102051	10000	Report	09.11.12	09.11.
Finished	SDS	EU SDS acc. to Reg. (EU) 453/...	Carl Anthony	Customer	102053	10000	Report	09.11.12	09.11.

Figure 16: Requested and successfully sent SDSs for item 70103