



CHEMICAL TANKER SERVICE

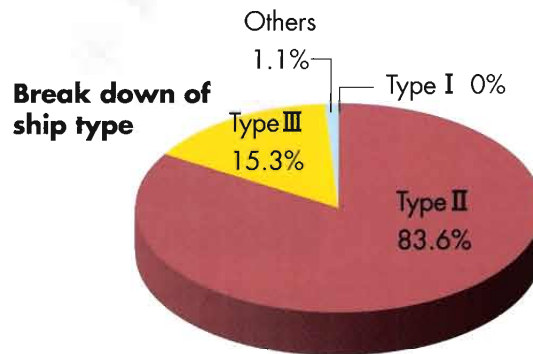
ClassNK
NIPPON KAIJI KYOKAI

NK class chemical tankers have a reputation for high reliability, quality and safety

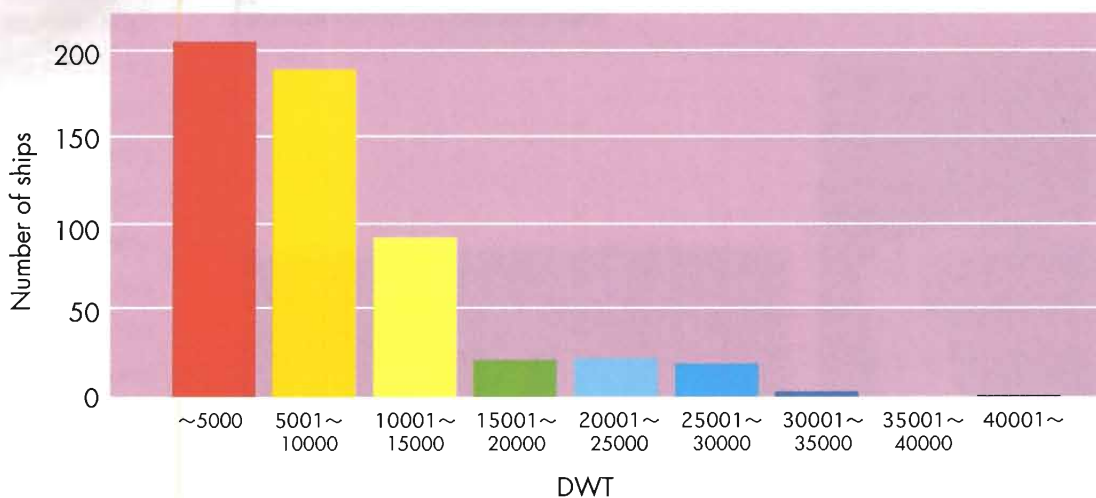
Class NK has more than a quarter of a century of experience surveying and classing chemical tankers. The Society is continually utilizing the most advanced technologies available in order to provide a broad range of services worldwide with respect to the design, construction, and operation of chemical tankers of various types and uses.

As such, the Society is highly regarded by ship owners, builders and others in the marine and related industry.

The total number of NK class chemical tankers at the end of 2007 was around 550 ships, of over 4.1mGT.



Break down of ship size

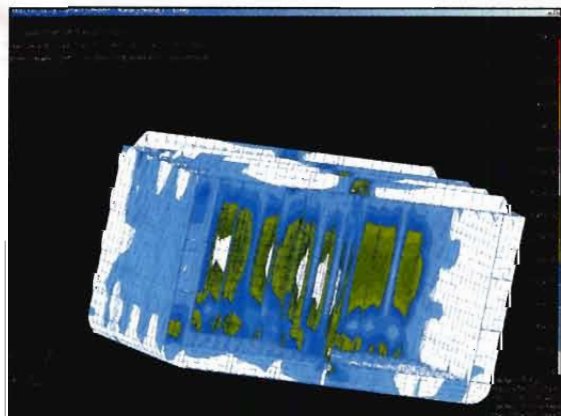


ClassNK Activities on related to chemical tankers

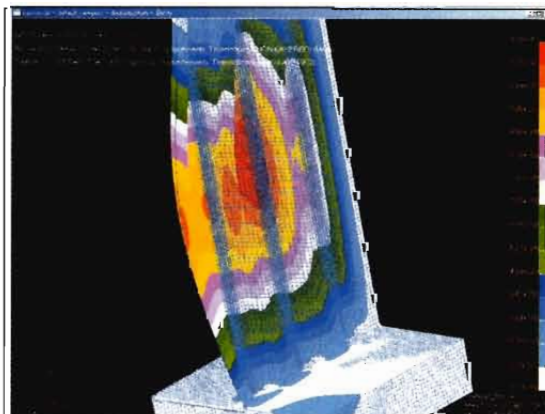
Only highly trained and experienced NK Surveyors, who have a good specialist technical knowledge of hull construction, materials, piping, cargo handling equipment, etc., are nominated to survey chemical tankers. The plan approval section in head office supports surveyors by identifying the key target points of each chemical tanker and providing other necessary information to the surveyors on site, to ensure the most reliable survey service.



Survey of a Chemical Tanker by an NK Surveyor during construction



Reliable structural analysis and suitable instructions for the surveyor to pay special attention to critical stress level points.



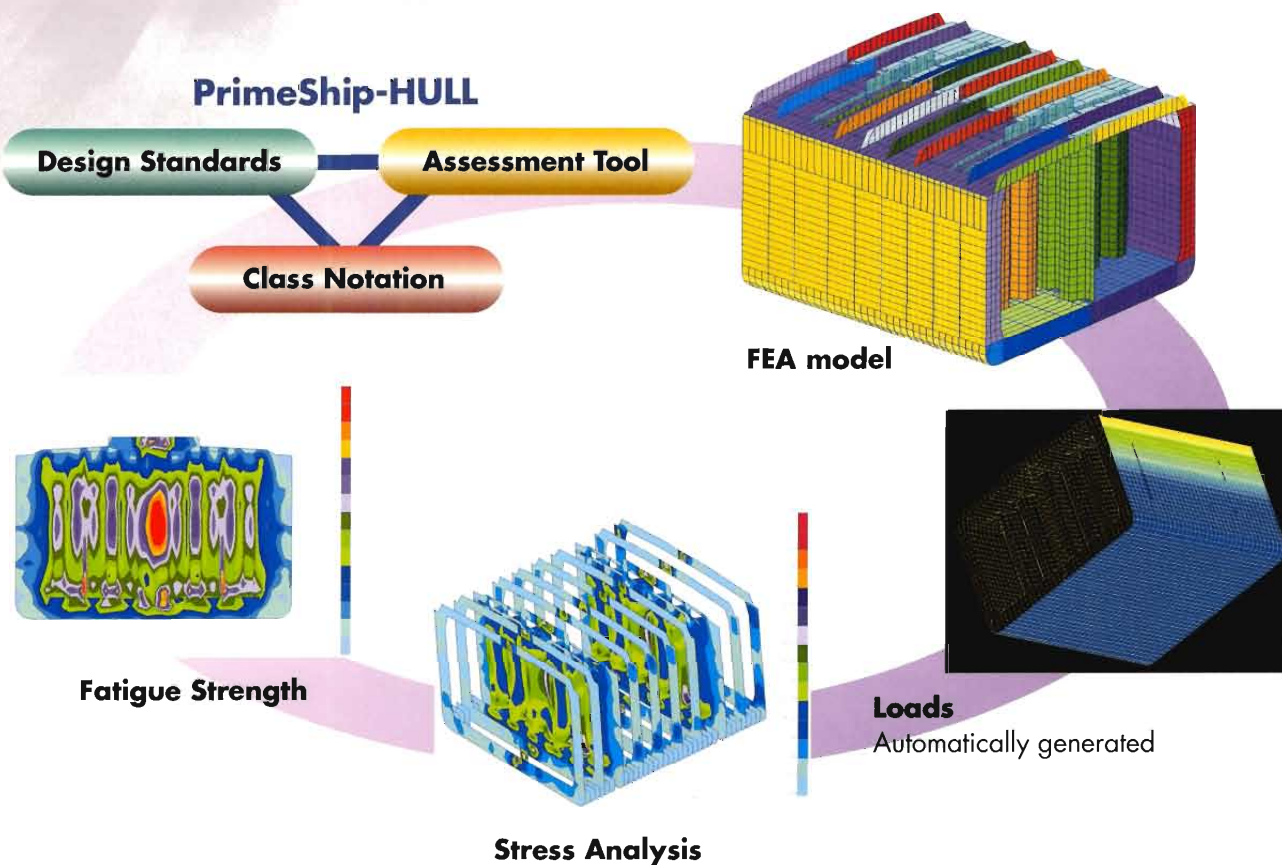
PrimeShip-Hull for Chemical Tankers

In its role as a leading global ship classification society, ClassNK is working to bring greater transparency to class rules and their development.

Its integrated systems and services for hull strength assessment, part of the PrimeShip suite of products and services, contribute to a comprehensive strategy for enhancing safety throughout the lifetime of ships.

In late 2001, ClassNK unveiled its guidelines on the structural strength of tankers, the latest addition to PrimeShip-Hull, its sophisticated hull structural strength assessment service, including the world's first clearly defined design state conditions.

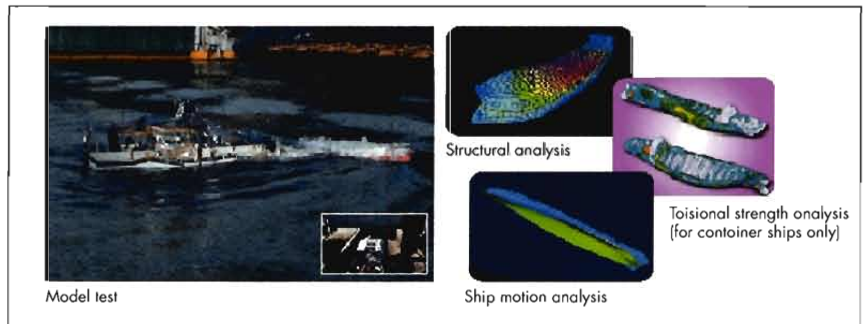
The revolutionary PrimeShip-Hull service provides clearly defined design loads for the first time, as well as introducing a host of other world-class features. Those who use the service receive PS-DA and PS-FA class notations, indicating compliance with the new design standards.



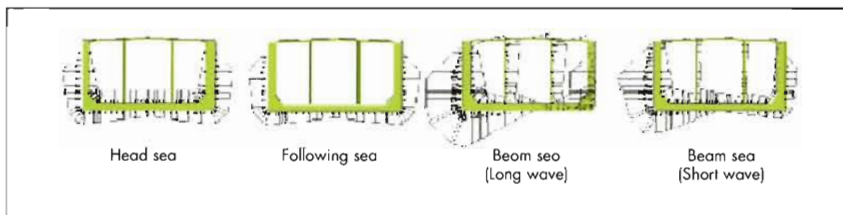
PrimeShip-Hull for Chemical Tankers

With PrimeShip-Hull, ClassNK has cracked open the black box of design loads, allowing a giant leap forward in ship design and safety. ClassNK confirmed both by analyses and many model tests the four predominant sea states – head sea, following sea and two different beam seas – and developed simplified formulas for use in PrimeShip-Hull.

Extensive Validation by Analysis and Testing



Tanker Design Loads



Class NK's "PrimeShip-Hull for Tankers" can even be applied to chemical tankers which have special features such as corrugated bulkheads, and can offer the ship optimum design and enhanced safety.



"SAN FERNANDO"
– The first Chemical Tanker assigned PrimeShip-HULL (PS-DA & PS-FA) notations.

PrimeShip-CHEMISYS

—A ClassNK Technical Service for Chemical Tankers—

1. The Amendment of MARPOL Annex II and the IBC Code

In October 2004 an amendment to MARPOL Annex II was adopted at MEPC 52 and an amendment to the IBC Code was adopted at MSC 79 in December 2004.

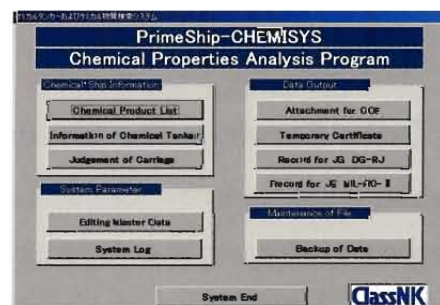
These amendments regulate modified requirements relating to ship type and pollution categories for noxious substances in line with new hazard criteria. These amendments to MARPOL 73/78 and the IBC Code has come into force on the 1st of January 2007.

2. "PrimeShip-CHEMISYS"

PrimeShip-CHEMISYS has been designed to assist clients in the creation of the cargo lists for the "Chemical Operation Manual" and "P&A Manual" and to offer advice on appropriate cargoes for chemical tankers, as requested by ship owners and operators. PrimeShip-CHEMISYS consists of the following three parts.

- (1) Chemical cargo database system
- (2) Vessel database system (construction and installations)
- (3) Search and output system

Chemical Name	Hazard Class	Other Properties
Acetic acid	3	...
Acetic anhydride	3	...
Acrylonitrile	2.3	...
Acrylonitrile copolymer	2.3	...
Acrylonitrile	2.3	...
Acrylonitrile	2.3	...
Acrylonitrile	2.3	...
Acrylonitrile	2.3	...
Acrylonitrile	2.3	...
Acrylonitrile	2.3	...



PrimeShip-CHEMISYS

The system is available as a stand alone system on CD-Rom, however by linking with the PrimeShip-CHEMISYS network via the internet, users can easily access the network from all over the world.

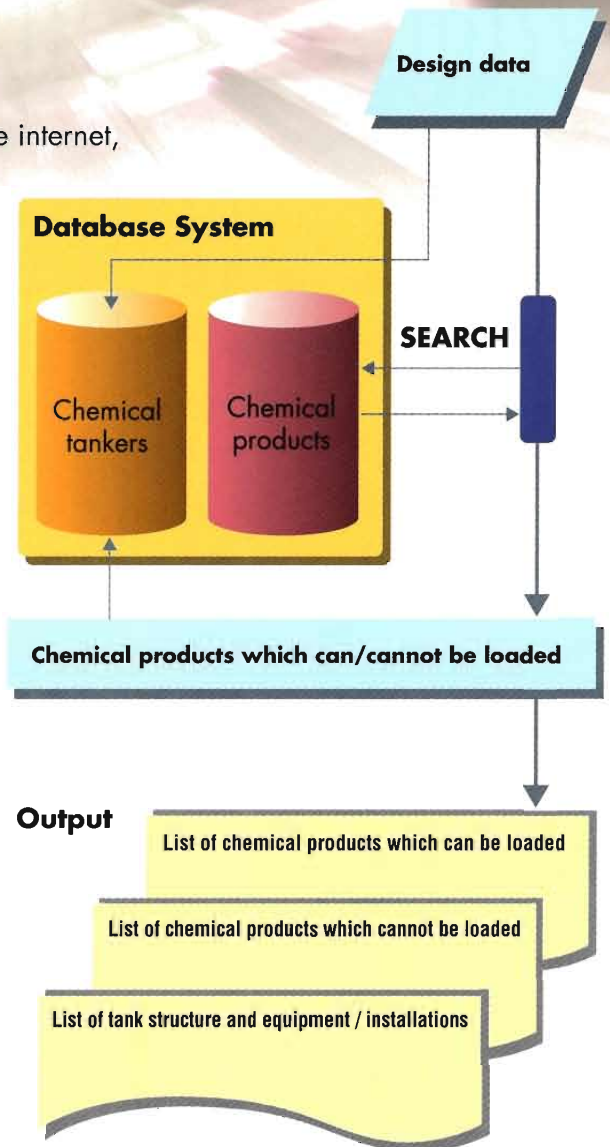
This ensures a prompt, even more up to date information service for ship owners, management companies, shipbuilders and design companies.

Using PrimeShip-CHEMISYS users can undertake planning for a range of activities as well as produce necessary documentation.

Using this system, users can for example;

- (a) Develop a chemical operation manual that complies with the amended IBC Code
- (b) Develop a P&A manual complying with the amended MARPOL 73/78 Annex II
- (c) Check hull structure and installation requirements when planning a newbuilding
- (d) Develop support documents to improve a ship's installation operations
- (e) Confirm the requirements for listing additional cargoes in the cargo list attached to the fitness certificate.

NK expects this system to be useful during the planning of initial designs, as well as when making cargo lists and also in reducing the workload in relation to modifying the manuals on board vessels.

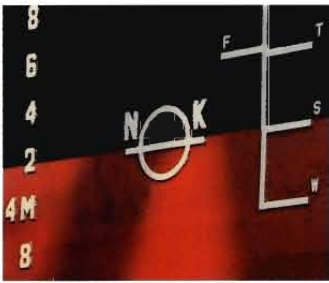


3. Additional Data Services for Chemical Products "PrimeShip-CHEMIDATA"

ClassNK also offers the following further technical services in addition to the "PrimeShip-CHEMISYS".

When loading chemical products on board chemical tankers, ship owners or operators can now quickly access the most appropriate and helpful information.

- 1) Search service on the chemical properties of products which are not listed in the IBC Code.
- 2) Identification matching between products' names stated in the IBC Code and most common trade names.
- 3) Compatibility information for chemical products which will be loaded in cargo tanks adjacent to each other.
- 4) Compatibility information related to the tank coatings.
- 5) Compatibility information related to the particular materials of construction, such as SUS steel plate.



ClassNK

NIPPON KAIJI KYOKAI

4-7 Kioi-cho, Chiyoda-ku, Tokyo 102-8567, JAPAN
Phone: +81-3-5226-2017
Facsimile: +81-3-5226-2019



www.classnk.or.jp