

**GÜNLÜ EVRAK**

14.01.2022

Sayı : 38591462-730.08.03-2022-200**Konu** : Kömür Taşımacılığına Yönelik Geri Bildirim Talebi

Sirküler No: 43

Sayın Üyemiz,

Uluslararası Deniz Ticaret Odası (International Chamber of Shipping- ICS) tarafından gönderilen 11.01.2022 tarihli ve CODG(22)01 sayılı yazıda, Almanya koordinasyonunda oluşturulan "Uluslararası Denizcilik Tehlikeli Yükler Kodu (IMDG Kod) Yazışma Grubu" nun kömür taşımacılığına ilişkin geri bildirim talebine yer verilmektedir.

Konuya ilişkin ICS Sekreteryası, Dünya Denizcilik Konseyi, Uluslararası P&I Kulüpleri Grubu ve Baltık ve Uluslararası Denizcilik Konseyi (BIMCO) dahil olmak üzere sektör dernekleri ile çalışma yapılarak "Yazışma Grubu" koordinatörü tarafından iletilen geri bildirim anketine yönelik yanıt taslağı oluşturulduğu belirtilmektedir.

EK-2'de sunulan bahse konu doküman taslağında, sorulara karşılık grup tarafından verilen cevapların kırmızı ile ifade edildiği, yazıda ayrıca, söz konusu geri bildirim çalışmasını desteklemek maksatlı, Almanya Federal Malzeme Araştırma ve Test Enstitüsü (BAM) tarafından " kendi kendine yanabilen maddeler" ile ilgili sunumu ve konuya ilişkin kaynak literatür bilgisinin paylaşıldığı ifade edilmektedir.

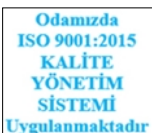
Bu kapsamda ilgili geri bildirim dokümanının (EK-2) incelenerek görüş ve önerilerin **en geç 24 Ocak 2022 tarihine kadar** ICS'e (georgios.charalampidis@ics-shipping.org) iletilmesi talep edilmektedir.

Saygılarımla,

*e-imza*İsmet SALİHOĞLU
Genel Sekreter**Ek:**

- 1- ICS Yazısı (2 sayfa)
- 2- Geri Bildirim Dokümanı (3 sayfa)
- 3- Sunum (11 sayfa)
- 4- Literatür (1 sayfa)

Dağıtım:

Bu belge, 5070 sayılı Elektronik İmza Kanuna göre Güvenli Elektronik İmza ile İmzalanmıştır.

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**Gereği:**

- Tüm Üyeler (WEB sayfası ve e-posta ile)
- Türk Armatörler Birliği
- S.S. Armatörler Taşıma ve İşletme Kooperatifi
- Gemi, Yat ve Hizmetleri İhracatçıları Birliği
- VDAD (Vapur Donatanları ve Acenteleri Derneği)
- KOSDER (Koster Armatörleri ve İşletmecileri Derneği)
- Türk Uzakyol Gemi Kaptanları Derneği
- Gemi Sahipleri

Bilgi:

- Yönetim Kurulu Başkan ve Üyeleri

Bu belge, 5070 sayılı Elektronik İmza Kanuna göre Güvenli Elektronik İmza ile İmzalanmıştır.



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11 January 2022

CODG(22)01

**TO: CONTAINER PANEL
DANGEROUS GOODS PANEL**

**COPY: MARINE COMMITTEE
ALL FULL AND ASSOCIATE MEMBERS**

FURTHER REQUEST FOR FEEDBACK ON THE CARRIAGE OF CHARCOAL

Action Required: To provide feedback to the undersigned (georgios.charalampidis@ics-shipping.org) as requested below by no later than 24 January 2022.

As informed in CODG(21)11, IMO has established a “Correspondence Group on IMDG Code Matters”, under coordination of Germany, which will continue the work of the Correspondence Group previously known as “Correspondence Group on a Review of Maritime Special Provisions” and in which ICS had been participating from 2019 to 2021.

Following submission of feedback to the group from various parties, including ICS, the coordinator summarised the points raised and circulated a document with questions on the carriage of charcoal and on which ICS is invited to respond.

The secretariat has worked with industry associations including the World Shipping Council, the International Group of P&I Clubs and BIMCO, and drafted suggested responses to the said questions. These can be found in red font under the coordinator’s questions in document (**Annex A**) (N.B.: any text in square brackets needs confirmation on which the secretariat welcomes and/or will seek feedback, as appropriate). Additional documents were provided for background information by the coordinator and can be found in **Annex B** (presentation on self-heating substances by Germany’s Federal Institute for Materials Research and Testing - BAM - describing the relation of self-heating and amount of densely packed material according to BAM) and **Annex C** (literature to support the presentation in Annex B).

Members are invited to review and provide feedback on the suggested responses contained in **Annex A**, taking into consideration, as appropriate, any information provided by the coordinator in **Annexes B and C**. Feedback should be sent to the undersigned (georgios.charalampidis@ics-shipping.org) **by no later than 24 January 2022**.

The secretariat thanks Members for actively seeking and providing feedback, as this is crucial for representation and promotion of Members' interests.

[CODG\(22\)01 - Annex A - Coordinator's summary questions and ICS suggested responses for Members' consideration](#)

[CODG\(22\)01 - Annex B - Presentation by BAM](#)

[CODG\(22\)01 - Annex C - Literature to support the presentation in Annex B](#)

George Charalampidis

Secretary to the Container and Dangerous Goods Panel

CG on IMDG Code matters

Round 1 – working document 2 - open issues

Ek-2

Exemption for carbon black of mineral origin

It is consensus that UN 1361 applies to CARBON, animal or vegetable origin. There is one proposal to add a SP to this UN Number, exempting carbon black of mineral origin from the provisions of the IMDG Code without a negative N.4 test result:

Questions:

- Is there any evidence, that carbon black of *mineral origin* will always pass the N.4 test, so that the exemption can be generally granted without individual testing?
- If there were such evidence, would the entry for UN 1361 be the correct place for such exemption, as UN 1361 applies only to CARBON of *animal or vegetable* origin?
- If such exemption were justified: what would be the reason that this exemption shall only be in the IMDG Code in a 900 series SP and not in the UN Model Regulations for all modes of transport?

We suggest that the entry for UN 1361 is *not* the correct place for such exemption, as UN 1361 applies only to CARBON of *animal or vegetable* origin. Such regulation will create confusion and interested parties may further pursue this, if needed, via a representation to the appropriate body such as the UN Sub-Committee of Experts on the Transport of Dangerous Goods.

Application of N.4 test to charcoal

Only two proposals opted to maintain the possibility to exempt charcoal based upon a negative N.4 test, but under the condition that the test report is submitted to the carrier and restrictions on volume/weight are imposed. The great majority of answers proposed that charcoal shall be declared always as class 4.2 dangerous goods.

Questions:

- The N.4 tests is based on the assumption that a 27 m³ cube of charcoal has a self-ignition temperature of 50°C. When the actual properties of the material differ from this assumption e.g. when the actual self-ignition temperature of a certain consignment is lower than 50 °C, is then the N.4 test result still reliable to prove that the material will not undergo self-ignition during transport?
We do not support to retain SP 925 which includes application of the N.4 test.
- When a consignment is exempted from the IMDG Code because it is considered not to have self-heating properties, what would be the rationale to impose additional requirements such as restrictions of volume or submission of a vanning certificate?
We do not support to retain SP 925 and as such, we do not support exemption.
- The properties of charcoal depend on the individual production process and are not unique. Thus one test result only cannot be taken as representative for all batches of charcoal consigned for shipment, even when they originate from the same shipper. Consequently, the exemption could only apply when every batch of a consignment is tested by a recognized laboratory and the test certificates are submitted to the carrier. Testing when carried out in a responsible manner for all individual batches would take time, constitute a considerable burden for shippers (who have to submit the

certificates and for carriers who have to check them) and would also generate expenses for shippers who have to pay the laboratories. When packing (and vanning) requirements are similar for exempted and non-exempted charcoal, what disadvantage would result for a shipper who declares his charcoal under class 4.2?

We strongly agree with the observation that the properties of charcoal depend on the individual production process and are not unique. To this end, we share information which was provided via email to WSC by Dr.-Ing. Martin Schmidt of Bundesanstalt für



Attachment -
Information provided

Materialforschung und –prüfung (BAM) in the attached document.

This information concludes:

“It would be important to determine the kinetics of different coals to find the most reactive coal. In this way, it may also be possible to identify production conditions that lead to a critical behavior of the coal or, conversely, to achieve that, with a change in the production process, coals are produced that exhibit a less critical ignition behavior. Only when the most critical conditions are identified is it possible to define safe transport conditions that can be applied universally to charcoal.”

We would like to register our strong agreement with the above conclusion.

Reduction of volume to enable dissipation of heat and prevent self-heating

The majority of responses agreed with the statement “This is an area that needs more science-based consideration”.

Questions:

- The UN N.4 test is based upon the principle that the self-ignition temperature of a self-heating substance increases with the volume. Is there any science-based evidence that this relation between volume and ignition-temperature does not exist?
- The CINS guidelines consider the reduction of oxygen in a container as more effective than the reduction of the volume of the self-heating material. This presumes that the oxygen content in a container can be reduced by completely filling it with self-heating cargo. Are there evidence-based researches showing that it is possible to reduce the oxygen in a container around the packages and between the particles of charcoal in the packages to an amount which would exclude ignition under normal atmospheric conditions (it means when the atmosphere in the container is not inerted (e.g. by replacing the air with nitrogen)?

We believe that this is an area that needs more science-based consideration, including an agreed set of planning and test assumptions and parameters taking into account the above-quoted conclusion by BAM.

Vanning certificate for cargo transport units with charcoal

A majority of responses was in favour of requiring a vanning certificate CEFIC proposal:
Vanning certificate required

Questions:

- Is a weathering period of 14 days appropriate or shall the duration be longer? If longer, how long?
- Shall the vanning certificate certify only that the charcoal had been weathered and cooled down before packing and will it be left to the discretion of the shipper to follow or not to follow the CINS guidelines regarding the stowage patterns or shall the shipper certify that he packed the CTU according to these guidelines?
- Is it considered to withdraw these guidelines and replace them by amended packing recommendations?

We support that a weathering certificate and a vanning certificate be provided by the shipper to the carrier.

Regarding the weathering certificate, this should describe the cooling process and attesting that the cargo has cooled down to no more than 5°C above ambient temperature and has weathered for at least 14 days before being stowed in the CTU (ref. E&T 34/J/6, para 9.3.3 of the Annex).

Regarding the vanning certificate, this should include elements to be set out in the IMDG Code based on an agreed set of planning and test assumptions and parameters taking into account the above-quoted conclusion by BAM.

[It is understood that there is no such verification element in the IG P&I /CINS Guidelines that the shipper should certify in accordance with any provisions contained therein, and that the Guidelines have now been retracted by the IG P&I and CINS pending the outcome of these discussions in the IMO.] *[Note to Members: As ICS does not have authorship of the IG P&I / CINS Guidelines for the Carriage of Charcoal and Carbon in Containers, the secretariat will seek clarification on the status of the Guidelines with a view to adding, here, an appropriate response in this regard to the Correspondence Group].*

Stowage of CTUs with charcoal on board ships

Some responders, not all, proposed to require stowage on deck only in accessible position.

Questions:

- The term “accessible position” is not clearly defined and therefore may be interpreted by the ship planner and a control officer in a different way, ending in a restowage order by the control officer. Is a legal requirement for “accessible position” necessary or could it be left to the discretion of the ship planner and the ships crew, to define the accessibility and to stow the CTUs on deck in a position they consider appropriate?

We suggest Stowage Category C of the IMDG Code to define “accessible” position.

- Ro-Ro vessels, in particular ferry vessels, often do not have a vehicle cargo space on deck. Is it intended to exclude the transport of charcoal in vehicles on ships which cannot load vehicles on deck?

We suggest stowage of vehicles under deck not to be permitted in this regard.

Sicherheit in Technik und Chemie

05.11.2021

SELF-HEATING OF SUBSTANCES

UN N.4 VERSUS EN 15188:2021

Martin Schmidt

Division 2.1 „Explosion Protection Gases and Dusts“

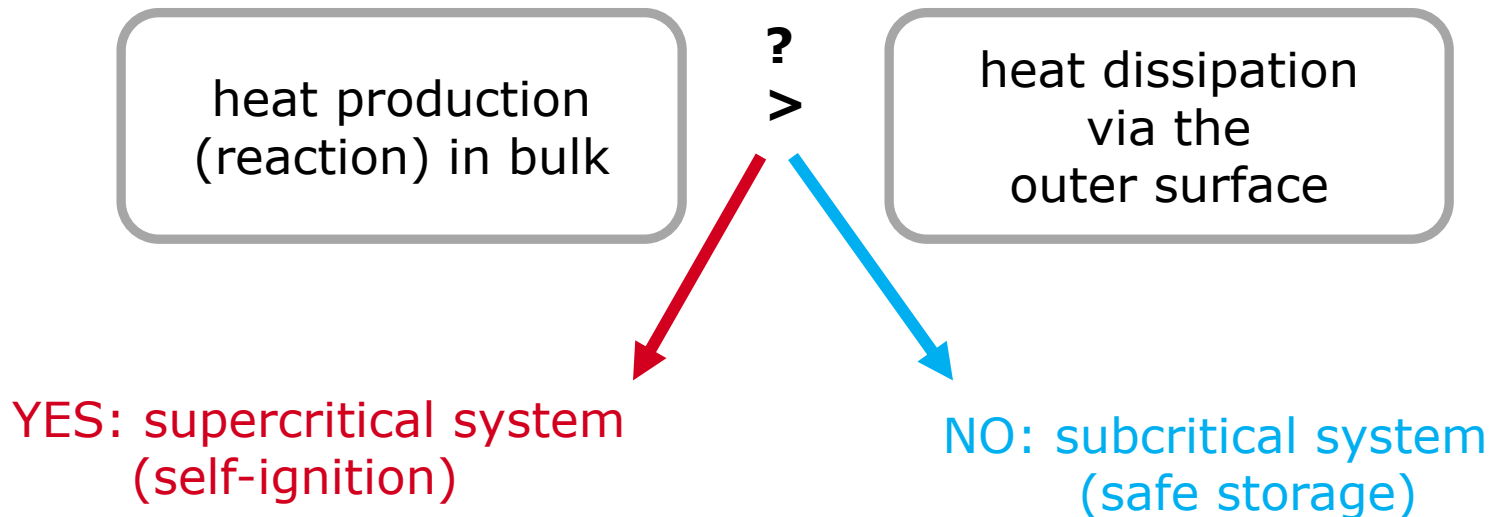
Basics self-ignition

Heat balance

Process of self-ignition:

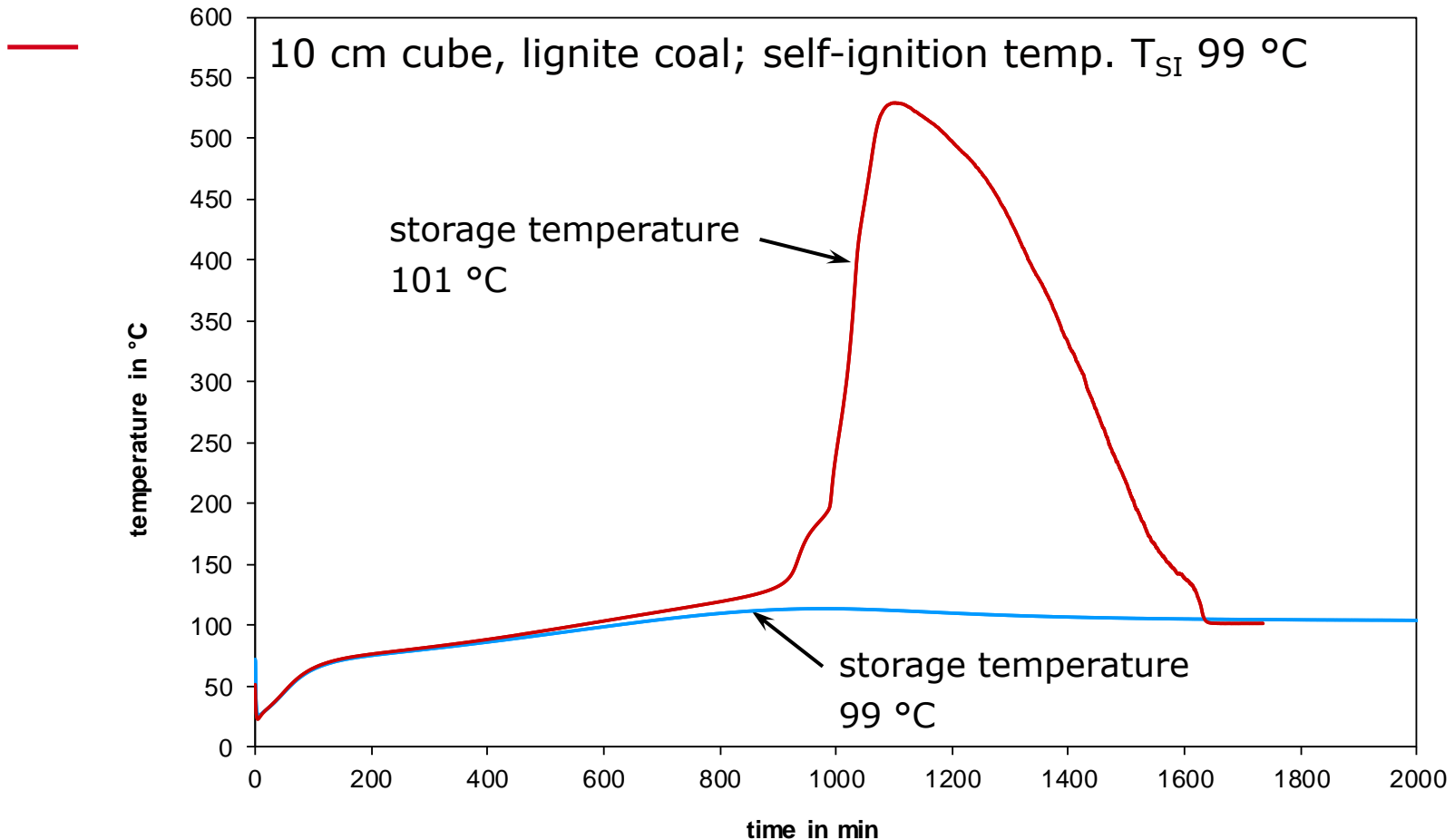
- Heterogeneous exothermic reactions of solids with oxygen
→ rate of reaction depends on the temperature (exponentially).

Storage of bulk material at supercritical conditions ?



Basics self-ignition

Laboratory tests



Important: T_{SI} is **not** a material constant!

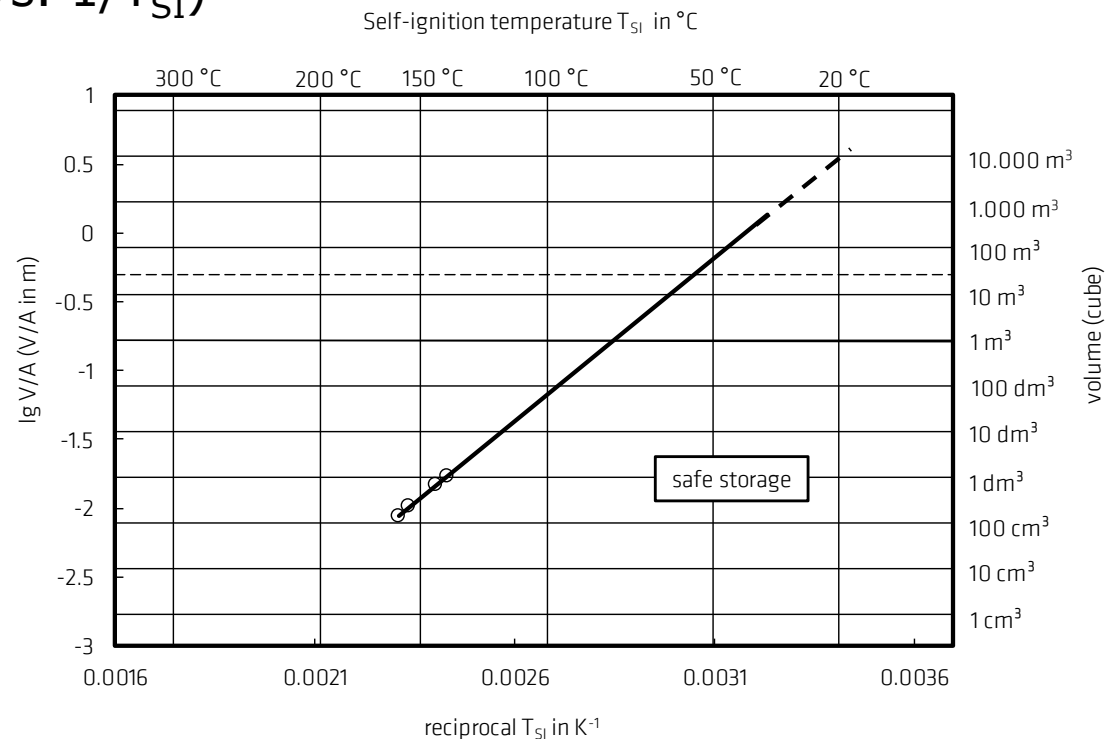
T_{SI} strongly depends on the volume/surface – ratio of the storage!

Self-ignition behaviour

Method EN 15188 (volume dependent tests)

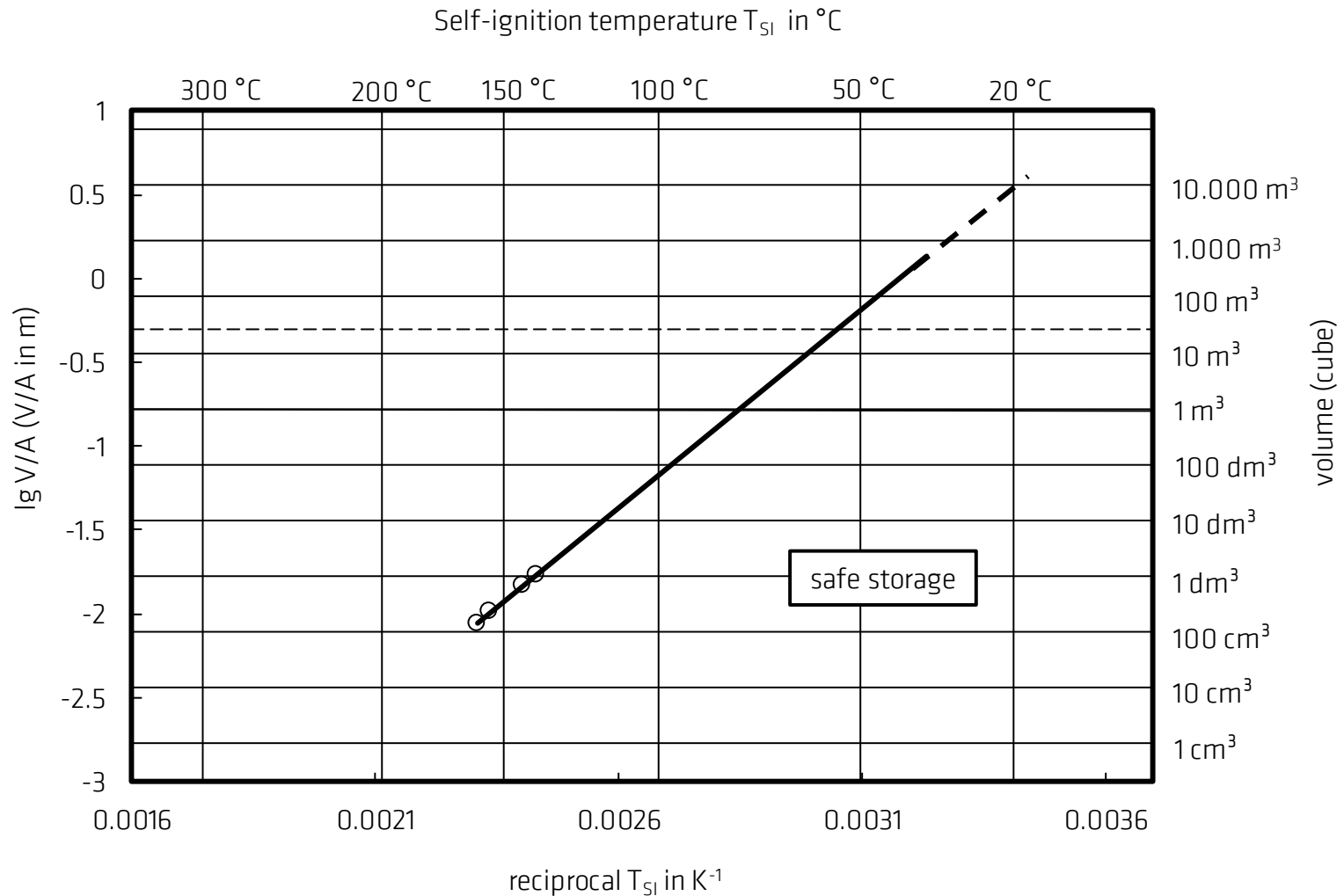
EN 15188:2021

- Determination of critical temperatures of at least 4 volumes
- Extrapolation to technical scale
(linear correlation $\lg V/A$ vs. $1/T_{SI}$)



Self-ignition behaviour

Method EN 15188 (volume dependent tests)



Self-ignition behaviour

Method EN 15188 (volume dependent tests)

Critical temperatures of at least 4 volumes are determined

Advantages:

- Reaction kinetic of tested material is considered
- Results can be extrapolated to technical relevant volumes (under restricted conditions)
- **Kinetic parameters can be derived**

Disadvantages:

- Time and material consuming

Self-ignition behaviour

UN N.4 test

- Screeningtest (1 dm³ cube at 140 °C; ignition/no ignition?)
- Test represents conditions of a 27 m³ package → no self-ignition at temperatures up to 50 °C?

Advantages:

fast, cheap, simple test set-up, amount of material

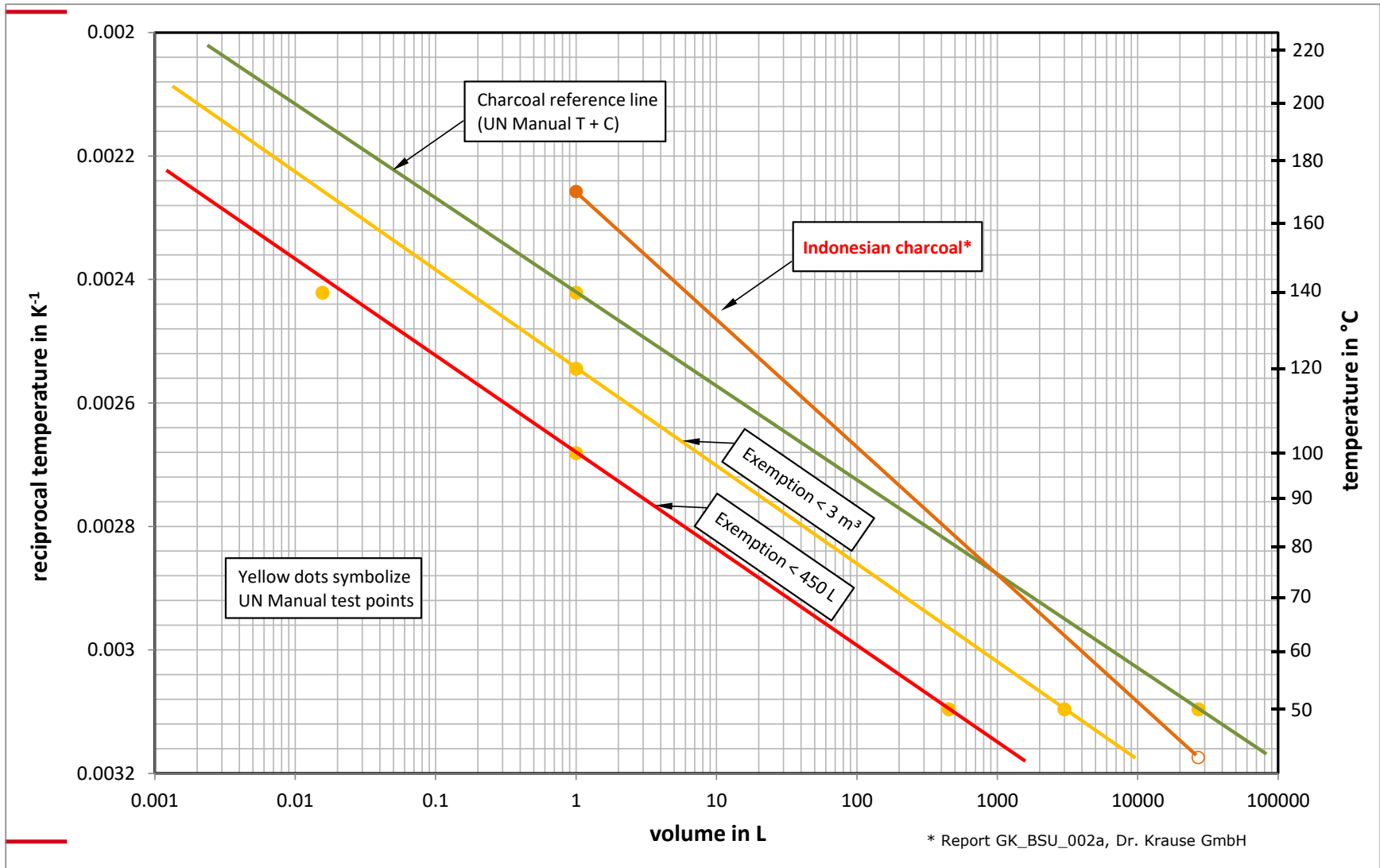
Disadvantage:

Reaction kinetics is assumed to be material independent

→ false positive and

→ false negative results are possible

Self-ignition behaviour - charcoal



How to prevent self-ignition?

-
- Reduce volume / change shape (e.g. reducing height of bulk)
 - Reduce ambient temperature (conditionally possible; e.g. location of the container)
 - Increase heat dissipation (conditionally possible, e.g. location of the container)
 - Cut off the oxygen supply (completely sealed cargo hold/container)
→ only small amounts of oxygen necessary for ignition process
 - Limit the transport time



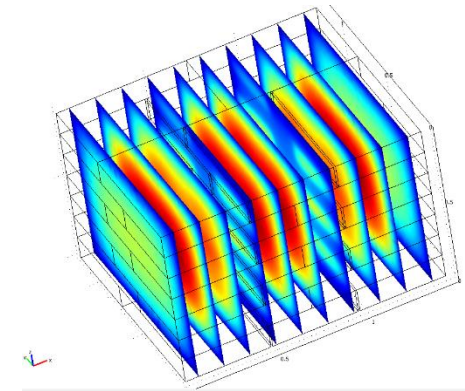
Source:
http://www.cnss.com.cn/html/2016/currentevents_0422/206860.html

→ Material data are necessary in order to derive appropriate measures

Hot-storage tests
up to 1 m³ volume



Source
<https://www.tainstruments.com/>



Numerical
simulation of self-
ignition processes

→ not subject to any
restrictions in start and
boundary conditions



Microcalorimetry
(detection of heat
flows at low
temperatures)

Thank you



Contact information

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EN 15188:2021, Determination of the spontaneous ignition behaviour of dust accumulations

Babrauskas, V., Chapter 9 "Self-heating" in "Ignition Handbook", ISBN 0-9728111-3-3, Fire Science Publishers, Issaquah, WA, USA, 2003

Beever, P. F., "Self-heating and Spontaneous Combustion", in SFPE Handbook of Fire Protection Engineering, second edition, NFPA, 1995 Ek-4

Boddington, T., B.F. Gray, and D.I. Harvey, "Thermal theory of spontaneous ignition: Criticality in bodies of arbitrary shape", in Philosophical transactions of the Royal Society, 1971

Bowes, P. C., "Self-heating: Evaluating and controlling the hazards", ed. B.R.E. Department of the Environment, HMS Office, London, UK, 1984

Frank-Kamenetzki D.A. Diffusion and heat transfer in chemical kinetics. Plenum Press, New York, London, 1969

Gray, B., "Spontaneous Combustion and Self-Heating" in Chapter 10 of the SFPE Handbook of Fire Protection Engineering, Third edition, Society of Fire Protection Engineers, Quincy, US, 2002

Hensel, Krause and Löffler: Self-Ignition of Solid Materials, Section 2.7 in Handbook of Explosion Prevention and Detection (Edited by Hattwig and Steen), WILEY-VCH Verlag, Weinheim, 2004

Hensel, W., W. John, "Die Schichtdickenabhaengigkeit der Glimmtemperaturen", Fortschrittberichte VDI, Reihe 3, Nr. 244, VDI-Verlag Duesseldorf, 1991

Thomas, P.H., "On the thermal conduction equation for self-heating materials with surface cooling", Trans. Farad. Soc. 54 (1958), p. 60-65

Thomas, P.H., Some approximations in the theory of self-heating and thermal explosion, Trans. Farad. Soc. 56 (1960), p. 833-839