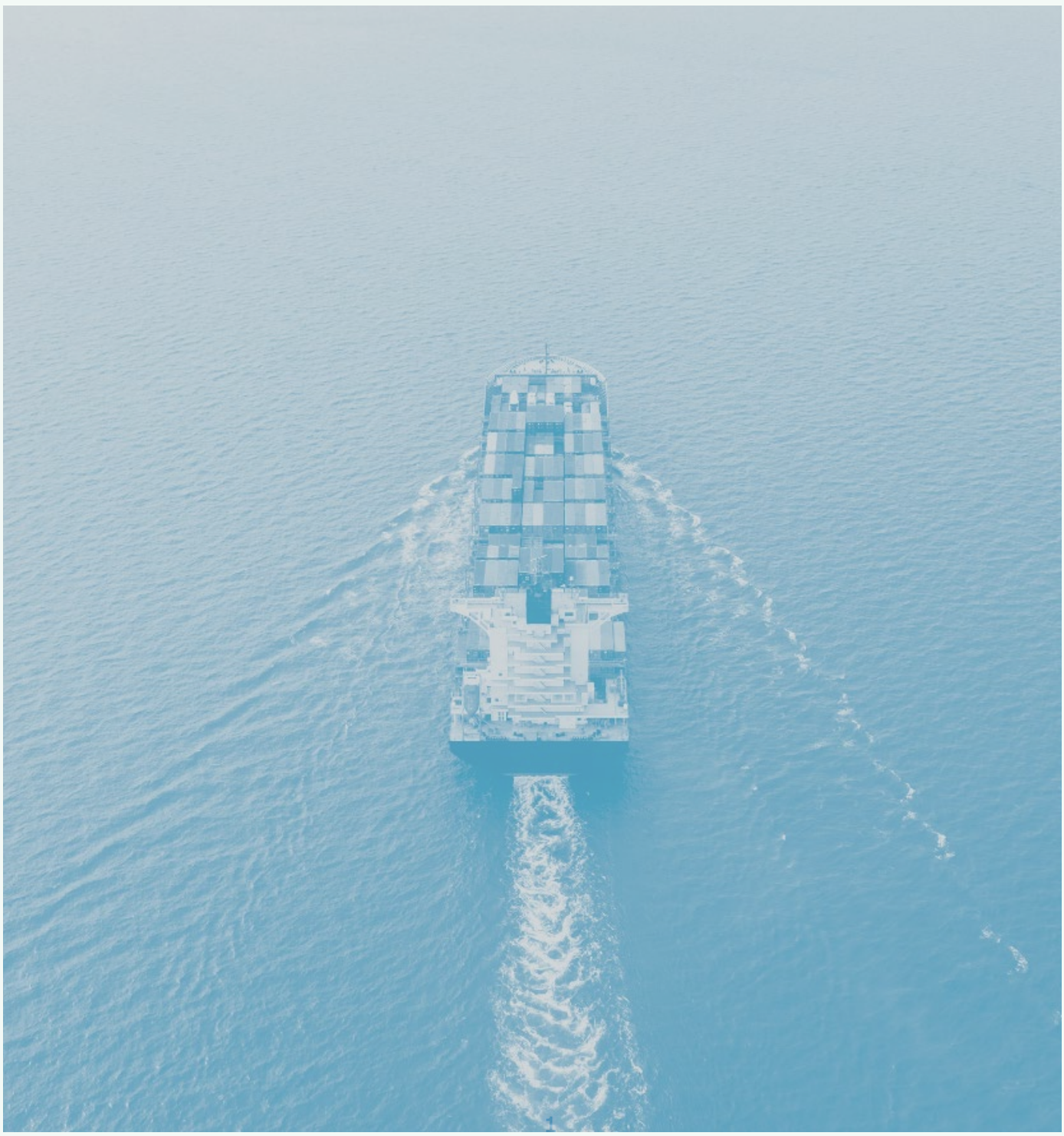
HAUSER & WIRTH

Sea freight: unlocking the potential for international art transportation

By Cliodhna Murphy, Global Head of Environmental Sustainability and Poppy Fairfax, Senior Registrar, Hauser & Wirth



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Executive summary

‘Transporting an artwork by air has on average sixty times the climate impact of moving it the same distance by sea.’ (Danny Chivers, 2019). With the fervent belief that we need to shift the dial and embed more sustainable practices, Hauser & Wirth is committed to the use of sea freight. According to the Gallery Climate Coalition (GCC), air freight is the most environmentally impactful activity the art world undertakes. To reach the 50 percent reduction in carbon emissions by 2030 set out by the GCC, nothing short of an extraordinary turnaround is required. While no shipping method is entirely free of carbon impact, our aim is to discover whether a broader use of sea freight can be adopted to reduce Hauser & Wirth’s overall carbon footprint.

> **We discovered that sending 6 exhibitions by sea instead of air has reduced our emissions by 200 tCO2e. As a starting point this represents 12% of our exhibition shipping in 2023.**

So what are the barriers? We set out to counteract the conventional thinking and entrenched behaviour that has held the art world back from considering low-carbon ways of shipping artworks. All too often paintings, photography and fragile sculpture are shipped via air freight, with sea freight entirely ruled out as not suitable or even impossible.

The goal of this white paper is to share information that will help other galleries and institutions to learn about our sea freight experiences. Only by sharing what we are discovering can we bring about collective impact together. We are learning as we go and here are some things that we’ve discovered:

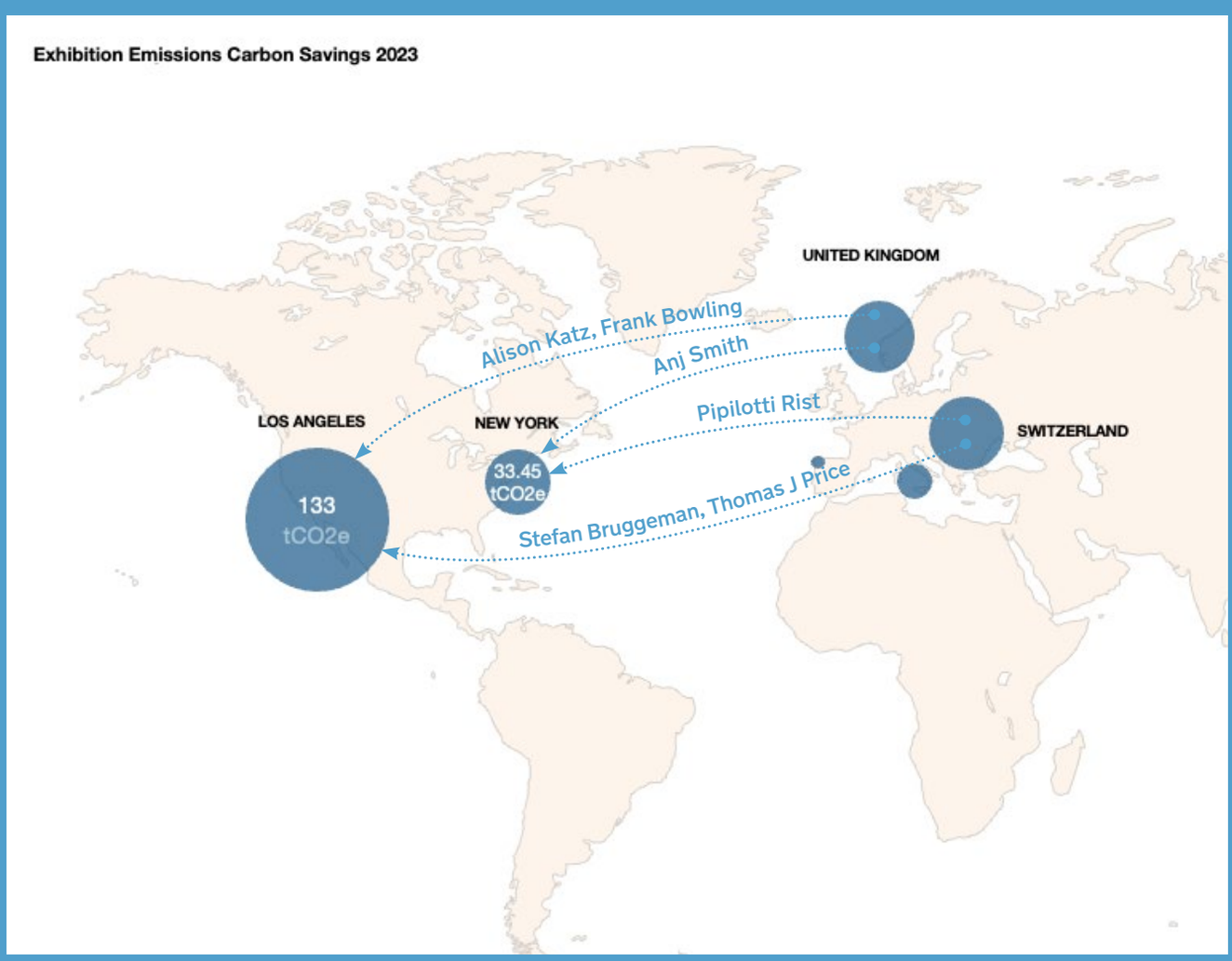
- The carbon savings are significant and also help us improve our industry as we learn about accessible ways in which we can all reduce emissions
- Sending by sea is roughly the cost equivalent of sending by air
- There’s huge potential in digital remote supervision tools to break siloed thinking in our organisations
- To truly shift our supply chain towards low-carbon options developing relationships with ship owners and port operators will be key in unlocking the wider adoption of this form of transport

We are cognisant of the environmental damage that container ships cause (MIT Climate Portal, 2023). We know that sending artworks by ocean is not the holy grail of sustainability courtesy of the myth debunking article written by JT Robinette on sea freight in 2022. Nevertheless, there has been limited testing of what is possible. That is why we invite you to participate with us as we track towards environmental sustainability. As the saying goes, this is a journey!

Cliodhna Murphy, Global Head of Environmental Sustainability and Poppy Fairfax, Senior Registrar, Hauser & Wirth

Climate change and its adjacent anxieties have registered within in my work from the beginning. Ecological chaos is impossible to ignore, as an incontrovertible characteristic of our age.

As I write, my paintings, en route to New York for my November show, are travelling as sea freight. Getting the studio organised for earlier collection deadlines, is something I am more than prepared to facilitate.
—Anj Smith



What we learnt and how to use our experiences

Read on to discover 5 key learnings. We figured this out through active discussions with our artists, colleagues, shipping agents, conservators, and insurers. We've included tips based on specific exhibition case studies.

1. How to prepare

Did you know?

We found in some instances it took 3 times longer to organise a sea shipment versus an air shipment, it can take time to identify the right insurance policy and to adhere to insurance guidelines.

Questions we asked

- How do we get the works to their destination well in advance for the pre-exhibition preparations?
- Do our teams have the time, knowledge and know-how to organise and manage the demands of a sea freight shipment?
- Are the artist and studio happy with this proposal?
- What about other stakeholders, i.e. insurance, fine art shipping agents?
- How best do we assess the artworks in terms of suitability for sea freight transit?

What we did

- **Timeframe:** we built a significant lead time to navigate our way through conversations with artist teams and studios.
- **Preparation**: in the example of the collection of works from the Frank Bowling UK studio in December 2022, we prioritised condition checking, assessing packing requirements and putting in place professional photography. We used the months of January and February 2023 to work closely with the internal gallery teams, fine art shipping agents and insurers.
- **Schedule:** we knew that the exhibition was due to open in LA in late May; allowing for the usual installation periods. We aimed to ship the sea freight with an arrival in early April. The schedule was proposed as a (supervised) container loading for mid-February and subsequent vessel departure the following week. The container arrived safely into LA on the 31 March, with the US agent (Dietl) making a port appointment to collect the container on the Monday 03 April.

> **Many issues can be avoided with accurate assessment of the artwork's suitability for travel. A good condition report will indicate stability and includes consideration of the materials the artist used, and how the artwork is constructed. A detailed condition report and images made before transit can be used for comparison on arrival to identify any possible changes.**
> **—Julia Nagle and Olympia Diamond, Conservators**

2. Innovation in remote supervision

Did you know?

Digital remote supervision tools mean that galleries can mitigate risks of temperature and relative humidity fluctuations on long distance ocean routes – we use a system called Tive. This means you can communicate with your shipping agents to pre-empt any environmental issues ahead of the vessel landing.

To evolve acceptance of sea transits, digging into remote supervision and live data tracking has been crucial. In our first couple of shipments, we inserted several data loggers into the packing, one of which was an iSense unit (supplied by Hanwell) which linked remotely to our London gallery climate system, allowing us to monitor the temperature and relative humidity of the cases in transit whilst at sea. The iSense unit operates from mobile phone signal and proved an invaluable way to monitor the climate condition of the cases in transit. We experienced a live example where an initial drop in temperature to approximately 12-15° Celsius was spotted which we were immediately able to flag with the shipping agents within the first day of the voyage. The temperature of the refrigerated (reefer) container had been set manually by the shipping line at the incorrect temperature. Thankfully it was being monitored and was corrected within 24 hours.

Lessons learnt, improvements for the future

We have subsequently invested in Tive Trackers as a better solution for tracking the temperature and relative humidity of shipments. Whilst the iSense unit is great, this is not available for all locations. The other dataloggers (TinyTags) only operate with PCs and require return shipment to the original location. We need a system that can be used globally and works remotely to track temperature, relative humidity and shock, whether via WiFi or mobile signal. On the agent's side, without the iSense unit we would not have picked on the issue with the reefer temperature. Our agents are working closer with port authorities to see if they can provide better supervision for future shipments, especially when seeing the reefer containers plugged in and temperatures set.

3. Digging into costs

Did you know?

Costs of sea shipments versus air are often equivalent

From our shipper Dietl we learnt, 'in most cases, shipping via ocean is not cheaper than air once you start to consider the many additional fees associated with the terminals on either side, including the harbor maintenance fee (HMF). Ocean shipping is cost effective when you have enormous shipments (full container loads), or if you are willing to put your artwork into an enormous shipment of unrelated goods (less-than container load, unsafe and likely uninsurable). Additionally, we've noticed some very steep rates on ocean coming from Europe to the US, in some cases twice as much as we charged for the same shipment outbound in 2022. The costs for trucking containers to and from the pier have always been more expensive than trucking airfreight, but has increased in the US by 100% or more. If there is any substantial value to a shipment you are probably not going to beat an air estimate unless you are shipping multiple containers. The HMF – 0.125 % of the shipment value – has no maximum for imports into the US. The cost of this fee often makes ocean financially uncompetitive vs. air.'

4. Crating and mitigating risks

Did you know?

We found that normal commercial gallery spec cases did not provide sufficient additional protection for the works whilst in transit at sea. Investing in high specification crating is essential.

Our crating involved retrofitting any existing travel frames with gasket seals and Correx fronts (rather than polythene) and ensuring that all outer cases followed a museum grade specification (Internal case lining: Plastazote / Zote foam normally LD33 or LD45 density, varnished exterior with captive bolts). It was considered that our normal commercial gallery spec cases would not provide sufficient additional protection for the works whilst in transit at sea.

Mitigating risks

In our sea freight containers, our team has included absorption polls and desiccants to sustain a state of dryness. For a recent Stefan Brüggemann shipment, on unloading the container our team found that the calcium chloride desiccant, which was hanging in three plastic cartridges along the length of the container, became saturated. In spite of an incursion of fluid along the corners of three of the crates, the artworks were well-protected by the exterior crates and on opening were found to be in the same condition as previously documented prior to the shipment. The works remained in their t-frames out of caution for several days, though with the dense foam and enamelled sealed exterior, the works were well protected.

Adding absorption material to the shipping container is a key step in the overall risk management of sea freight. After further research, suggested guidance is to include 6kg of

desiccant for a 20ft container and 12kg for a 40ft container. More details about where we purchased the desiccant can be found in the glossary.

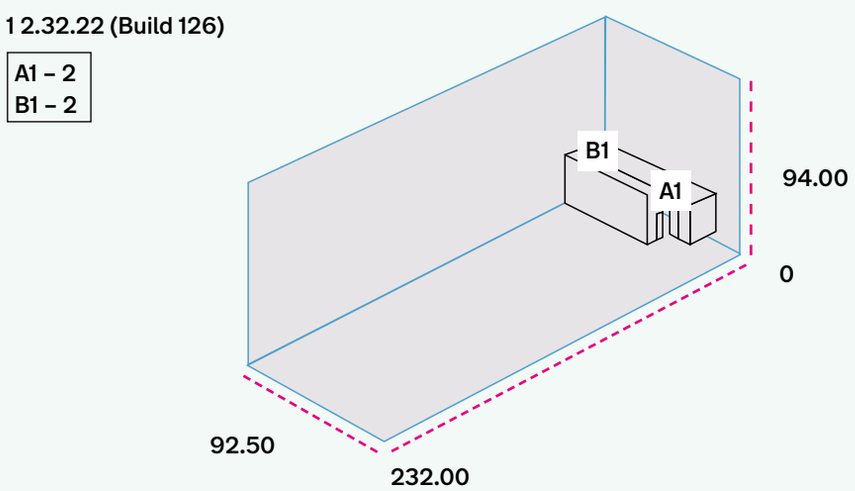
5. How to load containers

Did you know?

You can use your shippers load planning tool to interrogate the viability of a sea shipment based on the size of crates and number of artworks included. And, when that's been confirmed, to ensure there is sufficient space for ventilation in the container.

Digging into the detail and being transparent with what we've learnt by asking questions about the viability of sea has been crucial to gaining a better understanding of this method of shipment.

For one proposed shipment, we learnt that the crated artworks were too large for a reefer container, which was surprising given preconceptions that sea freight is best for oversized sculpture. This meant that the container would only be partly full with smaller works and therefore that this shipping method was not viable. This is an area where we can improve – we need to get better at connecting the dots and figuring out how to use empty space that is available on these containers. Nevertheless, it's a new approach that we are figuring out how to form the habit.



How our team are adopting sea freight and insights from other galleries

Just as goods and services are accounted for in consideration of an exhibition budget, ecosystem impacts now form part of a more holistic assessment and exhibition planning, factoring human activity within a new eco-economy.

For one recent exhibition I coordinated in our Los Angeles gallery, I encouraged the artist to fabricate new artwork in a foundry that left enough lead time in which to safely send part of the exhibition by ocean. Planning ahead meant I was part of the effort to save 59.46 tCO2e by avoiding air freight for this part of the shipment

The financial costs of this are not insignificant but the carbon savings are a worthwhile long-term investment. Artist Liaisons and Registrars have now shifted their approach to planning. Sending artwork by sea is one part of the toolkit we are evolving that is greening our exhibition program.
—Artist Liaison at Hauser & Wirth

Switching to sea freight is a necessity when thinking about reducing our carbon emissions for art transport and at Thomas Dane Gallery we have also been working on this over the last couple of years. We have been successful in many ways but there are of course still challenges to overcome. It is great to hear other galleries experiences, advice and troubleshooting, by working together, sharing knowledge and lobbying for improvements within the industry this will only help us collectively move towards our reductions targets.
—Hannah Wright, Associate Director Operations,
Thomas Dane Gallery and Gallery Climate Coalition Volunteer

In summary

The scope of this paper is to understand the feasibility of sea freight and highlight what Hauser & Wirth has learnt as it adopts ocean transport for exhibitions. Reassuringly, the availability of insurance for high value shipments has improved, the ability to remotely track shipments has become more sophisticated and shipping agents' relationships with vessel operators have significantly developed. Nevertheless, the administrative burden of organising an ocean shipment still outweighs that of air freight, costs are comparable to that of air freight and delays in transit are a potentially an unavoidable risk. Influencing ship owners and port operations would be an obvious place for the art world to shift its focus if we are to promote wider adoption of this transport method as the harbour maintenance fees and inconsistent environmental conditions (moisture, shock and extreme weather) remain risk factors.

As the art world counts down to 2030, many of us have collectively pledged to reduce our carbon emissions by at least half. There is a great opportunity for galleries and those in their sphere of influence to play a critical role in wider adoption of sea freight. Given the still limited scope of ocean particularly from a timeframe perspective it needs to be considered in tandem with other low carbon methods of moving art. This is alongside ways of artists making artworks where they are exhibited through residencies or local fabrication.

> **Stepping up the to the challenge to create real change will be driven by fact-based decision making, competence, resilience and the ability to follow through on the pledges that we have made in support of the GCC.**

With the right planning and more frequent usage, we believe that more sea container shipments will be possible for the future. It takes co-ordination, teamwork and forward planning, but is certainly an achievable aim. This approach will continue to form a strong aspect of the gallery's art and environmental sustainability mission.

Thank you for reading. We hope you are inspired to take forward some of what we've learnt and put this into action. We welcome you to follow our environmental sustainability activity on our website and if you want to ask questions then contact sustainability@hauserwirth.com

Appendix – insights from conservators, shippers and insurance brokers

How to prepare a sea freight shipment?

According to Julia Nagle Conservation adequate advance condition reporting and appropriate crating greatly mitigate risks posted by sending artworks by ocean. The conservation team said this:
'As conservators of modern and contemporary paintings, many of the problems we treat are caused by accidental damage rather than natural ageing. Tears in canvases, wrapping materials stuck to the face of paintings, handling marks, dents, cracks and mould growth can all happen when works are moved. While sea freight is no different from any other means of transport in this regard, it can increase the risk of exposure to high humidity levels and may mean that the works are not seen for several months, making appropriate packing and monitoring even more important. Many issues can be avoided with accurate assessment of the artwork's suitability for travel. A good condition report will indicate stability and includes consideration of the materials the artist used, and how the artwork is constructed. A detailed condition report and images made before transit can be used for comparison on arrival to identify any possible changes. They include mould damage to paintings that were inadequately packed in transit frames without insulation, and tissue strongly adhered to the face of an acrylic painting that was directly wrapped, rather than being fitted into its existing transit frame and crate as instructed, then exposed to high temperatures on the dockside. Condition issues that we have witnessed after artworks have travelled by sea freight have been the direct result of poor packing at the outset, and lack of monitoring during the voyage. Accurate assessment of condition, appropriate packing carried out in a stable environment, and monitoring during transit so that any issues can be corrected immediately, or at least anticipated on the work's arrival at its destination, are strongly recommended for all transport of artworks, including by sea.'

The team at Julia Nagle Conservation have been working actively with Hauser & Wirth to understand and build knowledge on how conservators can play their part in reducing emissions in the industry.

Similarly, our shipping agents have been evolving their know-how to respond to an increasing demand from galleries and museums sending shipments by ocean.

What trends are shipping agents experiencing?

We heard from fine art shippers Crozier that they have seen an increase in demand from galleries to use this transport method, but there's still potential to see a greater uptick. This chimes with feedback from insurance brokers. Crozier has set a target for sea freight to account for 15% of their shipping by 2030 as more galleries, auction houses and institutions seek sustainable solutions to meet their carbon reduction targets. What's been insightful about the sea freight program Crozier offers is that artwork is handled, secured and monitored exclusively by Crozier throughout its journey. This can alleviate some fear of an unsupervised shipment. Additionally, something our team identified as an improvement is offering an art-centric reefer container that has interior ratchet and bracing options. A range of load-bearing specific flooring tiles mitigate issues of container movement and vibration. Both better supervision and more stable conditions echo suggestions from conservators and insurance agents on how to develop wider adoption.

Why choosing a reefer container is important

Despite horror stories about lost containers at sea, according to the World Shipping Council (2023), occurrences of containers lost overboard have been steadily reducing over a 15 period due to improved safety. The global loss represents less than one thousandth of 1% (0.00048%) of the 250 million containers currently shipped each year, with cargo transported valued at more than $7 trillion. When galleries, museums or institutions ship by ocean, reefer containers are imperative as they must be plugged into ship's power. This means they are always loaded near the deck of the ship rather than near the top of the container stack where containers would be lost.

Collaboration with insurers is key

There has been an undeniable shift in the fine art insurance business, with art being transported by sea being seen as an increasingly common practice rather for large heavy sculpture. Adam Prideaux, Managing Director of Hallett Independent, and Christ Bentley, Head of Art & Specie of AXA XL, each of whom played a key role in opening up fine art insurance to cover sea transits, said that through the efforts of the GCC, Lloyds Market Association and Joint Specie Committee, the fine art insurance market is largely open to the risks of sea transits. The ability of the fine art insurance industry to get behind the one keyway in which the art world can tangibly reduce emissions is a huge structural leap forward.

Nevertheless, despite the work that Prideaux and his colleagues have pursued to manage down the risks of sea transit, he has not seen demonstrable evidence of the art world adopting ocean freight. Prideaux says: 'The increase in the number of galleries sending works of art via sea freight has been very slight. What we have noticed, though, is that those galleries already using sea-freight over the past couple of years have dramatically increased their usage.' In tandem with the GCC's Sustainable Shipping campaign, one of the key reasons why Hauser & Wirth wants to share what we are learning is to support a widespread adoption of ocean transport. Bentley optimistically posits that despite sea transits carrying a higher level of risk than air, 'it's reasonable to assume that the cost of insurance may be incrementally higher – however the insurance industry has a broader interest in supporting actions that delay the climate emergency, so we are continually working to erode the price difference to the extent that we can.'

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Our World in Data (2021) Online: https://ourworldindata.org/co2/country/united-states#per-capita-how-much-co2-does-the-average-person-emit

Robinette, John Thomas (2022) If Sea Freight is the Answer, What is the Question? Online: https://jtrobinette.com/opus-cultura/sea-freight-v-air-freight

World Shipping Council (2023) Containers Lost at Sea Report. Online: https://www.worldshipping.org/news/world-shipping-council-releases-containers-lost-at-sea-report-2023update#:~:text=Reviewing%20the%20results%20of%20the,lost%20at%20sea%20each%20year.&text=The%20liner%20shipping%20industry%20works,of%20containers%20lost%20at%20sea.

Resources and glossary of terms

Carbon footprint calculator: https://www.carbonfootprint.com/calculator.aspx https://galleryclimatecoalition.org/carbon-calculator/

Clean cargo: https://www.smartfreightcentre.org/en/our-programs/clean-cargo-1/

Data loggers: https://www.tive.com/ and https://www.geminidataloggers.com/?gclid=EAIaIQobChMIjojGoY3QgAMVA8HtCh1D5QCvEAAYASAAEgI3U_D_BwE

Greenhouse Gas Equivalencies Calculator - https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results

Harbour maintenance fee: https://www.freightcourse.com/harbor-maintenance-fee/#:~:text=In%20essence%2C%20the%20Harbor%20Maintenance,%2420%2C000%20x%200.125%25%20%3D%20%2425.00

Reefer container: https://www.freightcourse.com/refrigerated-container-ships/

Reefer Container – Dimensions

Common Refeer Containers

Specification		10’ Reefer	20’ Reefer	40’ Reefer
Dimensions	Outside Dimensions	10’ x 8’ x 8’5”	20’ x 8’ x 8’6”	40’ x 8’ x 9’6”
	Internal Dimensions	9’3” x 7’7” x 7’9”	17’9” x 7’6” x 7’5”	38’ x 7’6” x 8’4”
Door Opening	Width	2.324 meter	2.290 meter	2.290 meter
	Height	2.280 meter	2.264 meter	2.569 meter
Weight	Maximum Gross Weight	10,160 kg	30,480 kg	34,000 kg
	Average Tare	1,250 kg	3,010 kg	4,740 kg
	Maximum Payload	8,910 kg	27,470 kg	29,260 kg
Capacity	Nominal	16.6 cubic meter	28.6 cubic meter	68 cubic meter
	Usable under load line	16 cubic meter	27.3 cubic meter	65.3 cubic meter
	Height usable for cargo	1.840 meter	2.158 meter	2.394 meter

Tracking shipments: marinetraffic.com

Insurance industry recommended guidance:

- The insured objects must be fit to resist the foreseeable strain of a transport by sea (constitution of materials, mechanical strain during container handling, sea disturbance).
- The insured objects must be customary packed as usual for artworks, seaworthy and fit to resist the foreseeable strain of the voyage insured. The container must be considered as conveyance and never replaces the packaging.
- The insured objects must be shipped in standard 20’ or 40’ box containers using climate boxes for packaging. Air-conditioned containers (reefer containers) can be used in order to maintain the required climate conditions during the entire voyage. The use of open top, open side containers or flat racks is not permitted.
- The containers must be checked for leak tightness. Walls, ceilings, door seals, and locking devices must be fully intact. This assessment can be achieved by a person inspecting the container during daylight from the inside with closed doors, checking to see if daylight can make its way into the container, or by sending the empty container on a truck through a professional high pressure truck washing installation, checking to see if it stays completely dry inside. Untight containers must be strictly refused.
- The packed objects must be properly fixed (lashed, wedged, screwed, fixed with dunnage wood), in order to avoid loosening or sliding of the cargo during transportation.
- The containers must be shipped from point of departure until final destination in sealed condition as FCL/FCL (Full Container Load) container. Loading or unloading of other cargo or other artworks is not allowed.
- The containers must be fitted with climate loggers (temperature, humidity) and shock-sensors.
- Conventional shipping (without the use of standardised sea containers) is not allowed. • The sea voyage must be effected by specialized container carriers operating as liner vessels, which are fully Lloyds registered. The use of feeder vessels to reach port of departure or to leave port of destination is allowed.
- The port handling agent must be instructed to arrange for a stowage of the container on the vessel not in top row (risk of temperature fluctuation) and not in outside row (risk of jettison). If such stowage cannot be achieved, it must be checked by the handling agent if the shipping can be arranged on a later departure date.
- The transport of containers to port of departure and from port of destination must be effected by truck.
- The indemnity of the insurer in case of loss or damage shall never exceed the sum insured of the objects affected by a claim. This provision includes eventual general-average guarantees and general-average contributions following a final general-average statement.

Acknowledgements

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