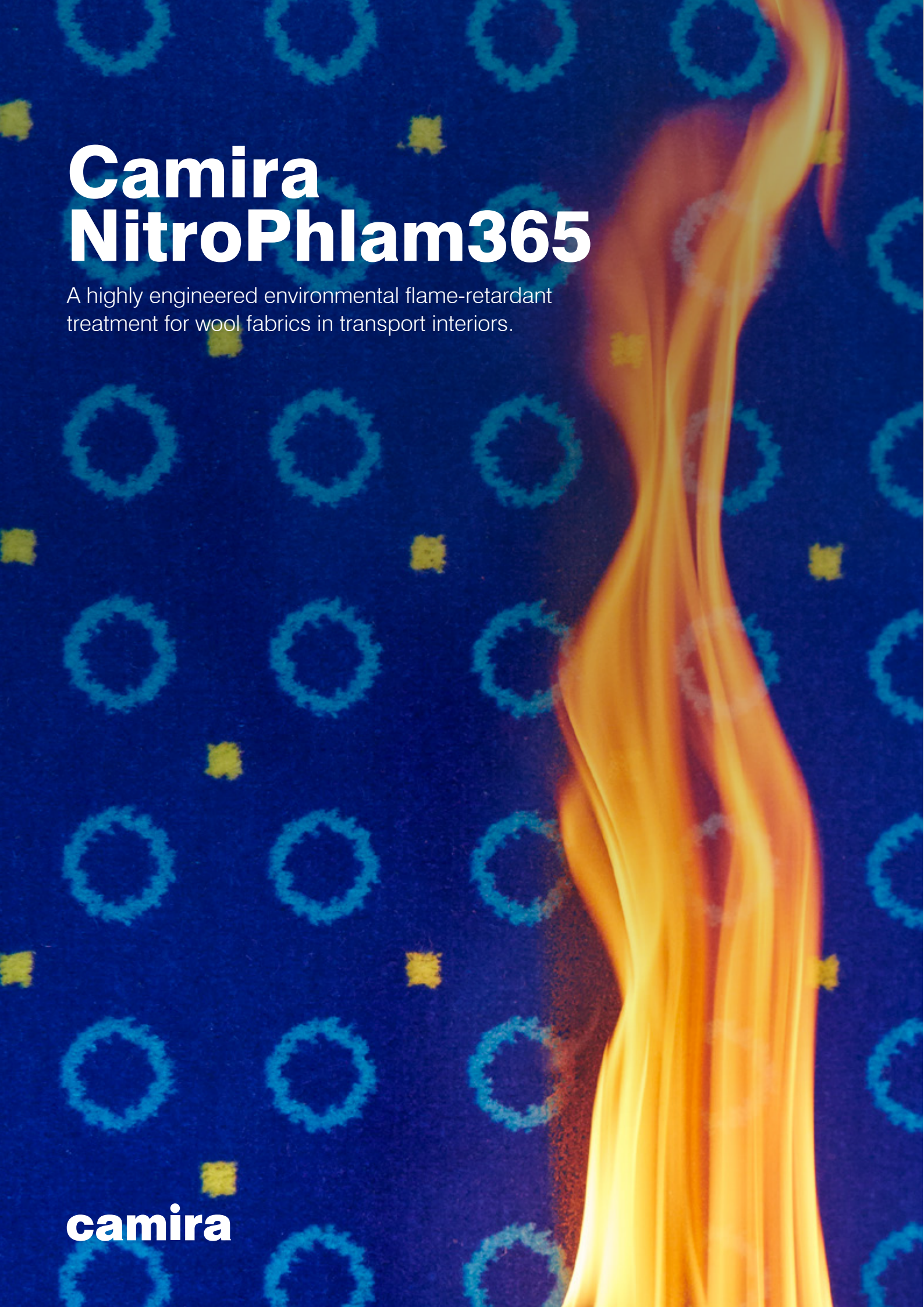
Camira NitroPhlam365

A highly engineered environmental flame-retardant treatment for wool fabrics in transport interiors.



camira

Engineered for environmental efficiency, NitroPhlam365 marks an important step change in flame retardants for wool transport textiles. Delivering the highest of performance and safety levels, while providing significant benefits to human health and the wider environment, this new FR treatment is halogen-free, eco-friendly, and enables wool fabrics to meet key flammability standards with ease.

- Halogen free
- Reduces CO_2 emissions during production
- Uses less water and energy during production
- Preserves abrasion performance
- Improves fabric strength
- Meets EN 45545 (R21) – HL3
- Meets BS 6853

Flammability

Rolling stock (Railway) flammability standards govern material requirements within public environments to ensure user safety. They specify test methods, test conditions and performance limits surrounding combustibility, fire growth and smoke generation of components to ultimately aid users in safe vehicle evacuation. The more stringent the classification within a flammability standard, the larger the evacuation window.

EN 45545-2: 2020 (R21)

EN 45545 is the European standard for fire protection which harmonizes Rolling stock standards across multiple geographies. EN 45545-2 (R21) assesses the ignitability, heat release, smoke opacity and toxicity of materials used within a railway carriage and establishes three specific hazard levels, ranging from the lowest HL1 to the most stringent HL3. Camira test to the latest release of the standard (2020).

- ☑ ISO 5660-1 Cone Calorimeter
- ☑ EN ISO 5659-2 Smoke Generation
- ☑ EN 17084 Method 1 Smoke Toxicity

BS 6853: 1999 (Table 9)

The British standard code of practice for passenger trains, BS 6853 (Table 9) assesses materials for rate of flame spread, smoke opacity and toxic fume. Superseded by EN45545 in 2013, this standard is still requested by some customers and as such Camira still support third party verified certification. As with the EN 45545 standard, BS 6853 has a range of category levels from category 1a (the most stringent) to category 2.

- ☑ BS 476: Part 7: 1997 Surface Spread of Flame
- ☑ BS 6853 D.8.5 Smoke Density
- ☑ BS 6853 B.2 Smoke Toxicity Chamber

Camira's NitroPhlam365 has been proven to meet EN 45545 (R21) to HL3, the most stringent test criteria, to the latest EN 45545-2:2020 standard as well as BS 6853. This means it provides optimal passenger safety in the event of a fire, reducing combustibility, fire growth and smoke generation to safe levels. The best flame retardants are tailor engineered to work in synergy with a fabric's composition and construction. NitroPhlam365 has been engineered by Camira to specifically complement and enhance the natural flame retardancy and outstanding physical characteristics of our wool rich transport fabric collection - please contact your sales representative to obtain a copy of our certification.

Durability

Alongside achieving these key flammability standards, NitroPhlam365 treated fabrics demonstrate superior tensile and tear strength and optimized abrasion performance compared to fabrics treated with traditional FR solutions. Camira's NitroPhlam365 technology ensures our fabrics will continue to achieve the requirements for heavy contact use in public transport applications over extended periods.

NitroPhlam365, explained:

What is NitroPhlam365 made from?

A future-proof FR treatment informed by the latest innovations in scientific research and development, this new technology is based on a bespoke combination of non-toxic and non-carcinogenic phosphorous and nitrogen compounds.

Halogen-free

While halogens have conventionally been used in flame retardants, typically chlorine and bromine, research has now shown that they have potentially carcinogenic toxicological effects, with some halogenated FR chemistries already banned or under review in certain markets and geographies. As a pioneering alternative, NitroPhlam365 is entirely free from harmful halogens, and uses compounds which do not bio-accumulate in humans or the environment - making it a compelling choice for today's eco and health-conscious consumers.

How does NitroPhlam365 work?

With its high moisture and nitrogen content, wool does not readily ignite and combust and, when exposed to a flame, will form a char layer on its surface. NitroPhlam365 enhances this natural flame retardancy by creating an extended char barrier which shields the wool fibres and upholstery foams from the flames, further controlling and slowing combustion while at the same time minimising toxic smoke production.

How is it applied?

With an easy application, NitroPhlam365 is applied to woven and dyed fabric as a wet process. The fabric is submerged through a treatment bath before heat drying and curing, which forms a durable, robust finish. Requiring substantially less chemical solution than traditional FR treatments, while achieving the same level of flame retardancy, the application process reduces water and energy usage by 15%, reduces CO_2 emissions by 15%, and harmful ammonia emissions by as much as 94%.

Environmentally intelligent

Expertly developed for a light environmental footprint, NitroPhlam365 delivers the following eco benefits (when compared to conventional FR chemistry):

Environmental category	Percentage reduction using NitroPhlam365	Environmental / health benefits
Energy used	**15%**	Saving over 7,700 kWh per week, or enough electricity to run an average UK home for over 2 years
Water used	**15%**	Saving over 260,000 litres of water per month, or enough for around 2,600 showers
Water discharged	**15%**	Saving 200,000 litres of trade effluent per month
Chemicals used	**48%**	A saving of over 35 tonnes of chemicals per year
Carbon footprint (CO_2 emissions)	**15%**	Saving 4.38 tonnes CO_2 per week. Over a year this would be the equivalent of taking over 40 cars off the road
Air particle emissions	**88%**	Reducing air pollution, improving air quality, and reducing incidence of respiratory conditions
Ammonia emissions	**94%**	Reducing ammonia emissions to prevent damage to sensitive habitats, loss of biodiversity and impacts to climate change


Saves over 260,000 litres of water per month - enough for 2,600 showers
Saves enough electricity per week to run a UK home for 2 years
Saves enough CO_2 per year to take 40 cars off the road
Saving 200,000 litres of trade effluent per month

www.camirafabrics.com