

DNP

Global Leader in
Thermal Transfer Ribbons

**Durable print
solutions for
heavy industries**





Introduction

In heavy industries, marking products and printing variable information requires a durable print image, especially for hazardous goods labelling. Even in the toughest environments, from steel mills to chemical plants, thermal transfer printing is perfectly suitable to render excellent results for UV, solvent, scratch and smudge resistance.

This brochure covers the following applications in heavy industries:

- Drum labelling
- High temperature resistance
- Chemical resistance
- Warning signs

What can we do for you?

With a wide range of globally available thermal transfer ribbons to print on various substrates, DNP can help you to ensure clearly printed barcodes and texts to improve process control, batch identification, safety and productivity.

We recommend using certified label substrates and adhesives in combination with a printing ribbon suitable for the application and compatible with the label substrate. DNP is collaborating with many label manufacturers such as Avery Dennison, UPM Raflatac, Lintec and Flexcon. We can test your label application in our laboratory and offer you advice about the best print solution.

DNP supplies thermal transfer inks to print variable information required in heavy industries. Suitable for many different types of regulations and compliances regarding printing, most DNP ribbons comply with industry certifications such as REACH, ROHS, CSA and UL.



Durable print solutions

Drum labelling

Every day, many thousands of drums containing chemicals are shipped around the globe. Its labels are typically used for identification, warning and instruction regarding the chemicals inside.

Because of the content of these drums, but also the environment the drums can be exposed to, the labels on the drums are met by regulations BS5609 and GHS to assist this industry.

BS5609

BS5609 is a durability specification for chemical drum labels being used in maritime environments. A maritime environment is defined as prolonged exposure to salt water through immersion and abrasion.



To obtain BS5609 approval, a two-part test is conducted by an independent, third-party laboratory:

- **The first step:** Adhesion and durability of the material blank label material is tested.
- **The second step:** Print permanence of the printed label is tested.

Successful completion of the above allows for a specific ribbon and a specific material to be offered as meeting BS5609 specifications when used in conjunction. It is important to understand that ink alone is not BS5609 compliant.

DNP has your solution.

Our black and red ribbons perform in the harshest maritime environments and can be GHS compliant and BS5609 certified if the products work in combination with the respective label material.

DNP TTR resin ribbon solutions	
Black Resin TTR	V300 R300 R316 R510 ^(HF) R550 R600 TR7541
Red Resin TTR	R300Red R510Red

GHS

GHS stands for Globally Harmonized System of classification and labelling of chemicals.

More specific, GHS governs the physical design of a printed label used on chemical drums transported across the oceans.

GHS is an add-on to BS5609.

In everyday terms, GHS stipulates black and red ink, and which specific symbols are to be used. It is a global initiative designed to make hazardous chemical drum shipping labels universally recognizable, by standardizing the symbols used.

- **The first step** for GHS compliance is to use a label/ink combo with BS5609 approval.
- **The second step** is for the label printer to use the correct GHS symbols for whatever potential hazards are contained within the product being labelled.

It is important to understand that GHS is not a label/ink specification; it is a compliance standard, meaning only the label designer can ensure GHS compliance.

Durable print solutions

High temperature resistance

In industrial environments where extremely high temperatures are standard, heat resistant labels require thermal transfer inks with similar resistance. Whether it concerns baking or smelting ovens, DNP can help you to improve your output and shorten waiting time for material to cool down before onward processing. With our range of heat resistant thermal transfer ribbons, there is always a suitable solution.

Benefits of TTR printable heat resistant labels:

- Correct information added as early as the point of manufacture.
- Improve process control and batch identification by eliminating the inaccuracy of handwritten text or reading misinterpretation.
- Eliminate waiting time for the materials to cool down.
- Reduce the risk of heat related injuries.
- Reduce customer complaints and costly returns of goods.

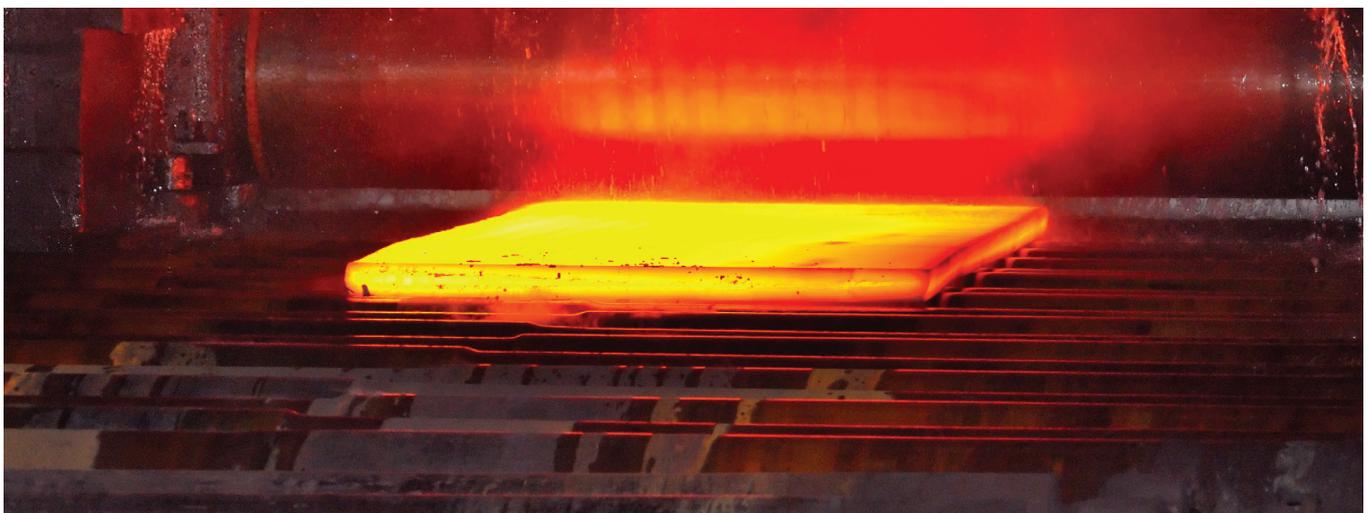
With thermal transfer resin inks being exposed to high temperatures for a short or continuous time; use DNP as your preferred TTR supplier.

While R510^(HF) has been the industry preferred resin for such operations, the all new R550 has been tested and approved to withstand even higher continuous temperature exposure.

For even more extreme applications up to 1250°C, DNP's Sintering ribbon is the perfect choice. Intended to be used on ceramic and aluminum labels, the print with Sintering ribbon needs to be exposed to 430°C to bond permanently onto the substrate. From that moment on it can withstand extremely high temperatures, making it an excellent solution to save considerable waiting time in steel mills, increasing the plant's productivity.

DNP heat resistant printing products for extremely hot applications		
up to 250°C	up to 425°C	up to 1250°C
R316 R510 ^(HF)	R550	Sintering Ribbon*

*Sintering is the process of compacting and forming a solid mass of material by heat, without melting it to the point of liquefaction.



Durable print solutions

Chemical resistance

From direct sunlight to brake fluid and from salt water to extreme temperatures; DNP offers printing solutions to print on your preferred label material to meet different industry requirements.

Hazardous environments demand the use of highly resistant products and this is certainly applicable when choosing the correct label and thermal transfer ink for these conditions.

DNP’s thermal transfer ribbons deliver barcodes, texts and images, which are resistant to chemicals and hold up to tough working conditions.

Both the labels and thermal transfer print must withstand all kinds of environmental conditions associated with storage, usage and transportation. From resisting abrasion to standing up to solvents, a highly durable ribbon is needed for this.

DNP TTR ribbon solutions with a range of chemical resistance	
Resin ribbons Excellent durability	Coloured Resin ribbons Excellent durability
V300 R300 R390* R510 ^(HF) R550 R600* TR7541*	R510C R510W TR3370 VR301

*Near edge printing solutions

DNP’s global offices have in-house research and development laboratories to print and test various label and printer combinations. With the aid of our test equipment we are able to test your printed label against any chemical solvent.

DNP’s latest durable innovation – R550

R550 is designed for extreme resistance against most chemicals used in the automotive, chemical, pharma, electronics and other industries. Enjoy the benefit of printing extremely small, crisp and clearly readable characters with great precision. Next to its extreme durability, R550 offers a smooth ink transfer at lower heat settings, which makes R550 compatible to a broad range of durable substrates.



R550 - Rub test with various solvents												
Brake Fluid	Ethanol	Anti-freeze	Formula 409	Gasoline	IPA	MEK	Mineral-Spirits	Motor Oil	Toluene	Windex	Xylene	N-Hexane
✓	✓	✓	✓	✓	✓	Limited	✓	✓	Limited	✓	Limited	✓

Smudge resistance measured with Colorfastness Tester: 100 Cycles of 800 Grams with Cotton Cloth on topcoated PET

Durable print solutions

Warning signs

Signage is commonly used in working and industrial areas with possibly hazardous situations.

In such areas, warning labels are not just a precaution, but should also withstand the often harsh environments of its surroundings. For this, filmic labels with smooth filmic surfaces, such as polyester, polypropylene and polyethylene are commonly used label materials that require a thermal transfer resin ink able to bond with such a smooth surface. The printed image has to last for many years, both indoor and outdoor.

Besides indoor signage, DNP has many printing inks available for prolonged outdoor usage and able to withstand chemical solvents or extreme temperatures, which are perfect to help sign-post possibly dangerous or hazardous situations.



DNP TTR outdoor ribbon solutions		
Wax/Resin ribbons Premium durability	Resin ribbons Excellent durability	Coloured ribbons**
M255 M265 TR4500* TR5080 TR6080	V300 R300 R316 R390* R510 ^(HF) R550 R600* TR7541*	R510C TR302X VR301

*Near edge printing solutions

**UV-stability depending on pantone

Coloured DNP products for printing on filmic labels:

DNP's R510C offers the same unmatched durability as our R510^(HF) Ultra Durable Resin. Designed to print on filmic labels, it's available in eight standard colours and is the industry's toughest colour resin ribbon capable of handling extreme environments with DNP's unrivaled scratch and solvent resistance.

Below are the R510C standard colours*:

			
Red PMS 185	Blue PMS 2935	Green PMS 347	Matte Silver PMS 877
			
Yellow PMS 116	Orange PMS 1505	Deep Blue PMS 287	Green PMS 334



*Custom colours on request



To enhance knowledge and culture through letterpress printing, Dai Nippon Printing Co., Ltd.'s predecessor, Shueisha was founded in the Ginza district of Tokyo in 1876. Since then, Dai Nippon Printing (DNP) has become one of the world's largest diversified printing/coating technology companies.

Today, Dai Nippon Printing employs over 38.600 people at its plants and sales offices in Asia, Europe, North America and Oceania. DNP's operations include commercial printing, packaging, decorative materials, electronics, business forms and information media supplies.

In the early 1980s, Dai Nippon Printing was one of the pioneers in thermal transfer ribbon (TTR) technology. Nearly 30 years later, in 2008 Sony Chemical's TTR division was transferred to Dai Nippon Printing. With the merge of Sony Chemical's TTR division, DNP's Imagingcomm division was established. Thereby, also founding DNP Imagingcomm Europe B.V. DNP's Imagingcomm division has ever since grown to be one of the world's largest manufacturers of thermal transfer ribbons for barcode and dye-sublimation printers. Our European division provides solutions to the barcode, label-, photo- and ID & credit card industries in the European, Middle Eastern, African and Russian markets.

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