

ROLLING STOCK SOLUTIONS

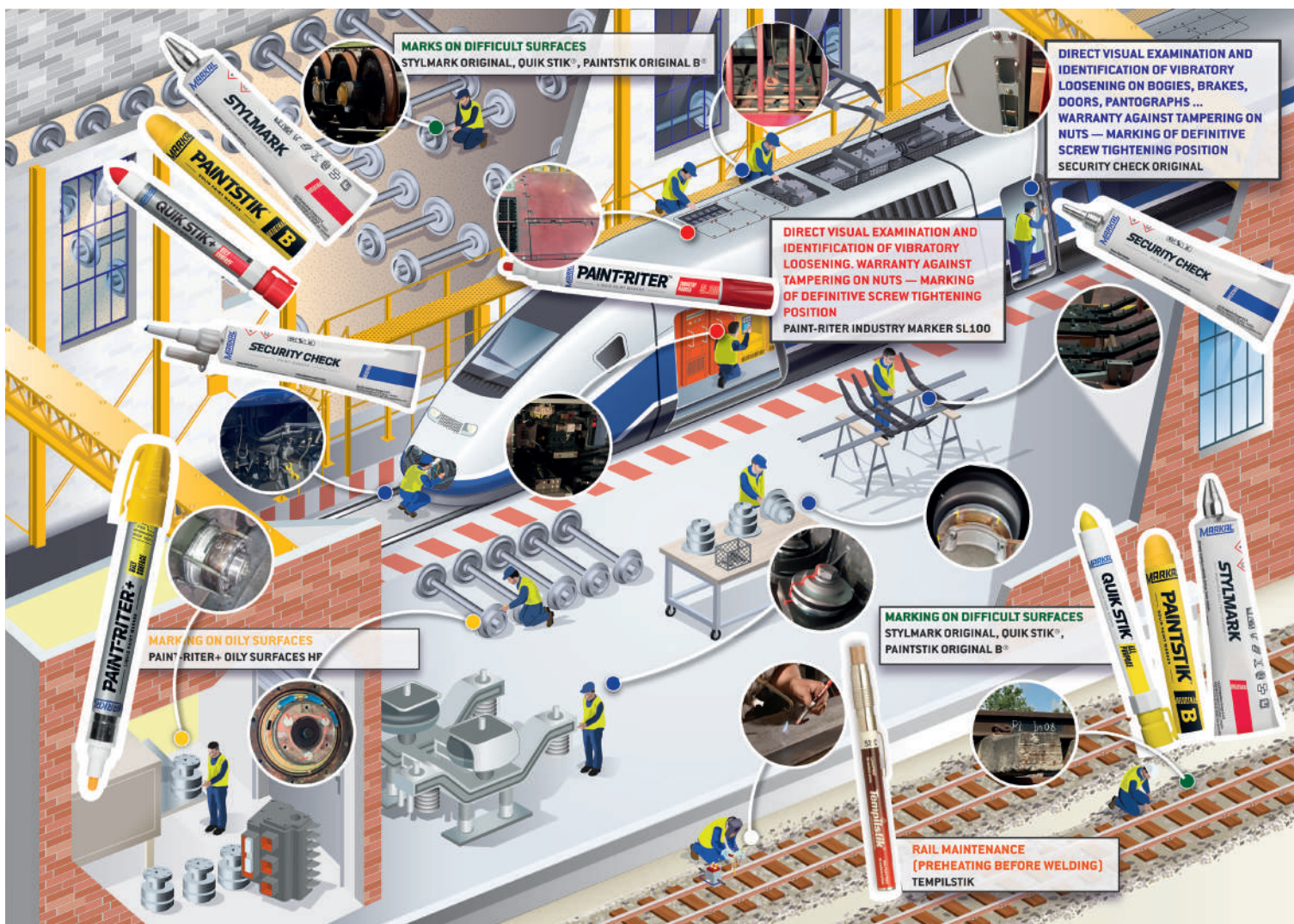
VIBRATION DETECTION:
BOLTS/FASTENERS
HYDRAULIC CONNECTIONS

IDENTIFICATION:
IN DIFFICULT,
HARSH ENVIRONMENTS

HEAT DETECTION:
HOT BOXES, TRACKS REPAIRS

STEEL PROTECTION:
ALUMINIUM WELDABLE PRIMER






PRECISION COST EFFECTIVE SOLUTION

SECURITY CHECK Original's nozzle is designed to provide the possibility of various marking sizes. It also increases the precision of the marking simply by screwing the nozzle on the head of the marker. Thanks to its length (5cm), the marker's head is extended by 3 cms, offering easy access to hard-to-reach areas. The new tip comes with a built-in cap for a convenient and quick closure. An integrated retaining wire keeps the cap attached to the nozzle, so that it can't be lost and remains always at hands.

MORE THAN 2X AS MANY APPLICATION WITH THE PLASTIC TIP

| PART NR. | |
|---|----------------------------|
|  | SECURITY CHECK Plastic tip |
| | 96676 |



Instructions of use

- Cut the nozzle tip to the desired level using a cutting tool
- Remove the cap from the tube
- Screw the nozzle onto the tube
- Apply gentle manual pressure on the tube to release the paint
- Do not bend or roll the tube so as not to puncture it
- Properly replace the cap after prolonged non-use



SECURITY CHECK PAINT MARKER





VISUAL INSPECTION SOLUTION

BOLT/FASTENER/HYDRAULIC CONNECTION FAILURES

Loosening fasteners/bolts & connection devices due to vibration is a constant train maintenance issue. Visual identification of bolt/fastener/coupling connections without the need for manual torque testing is critical to maintaining operational efficiency.

SECURITY CHECK PAINT MARKER

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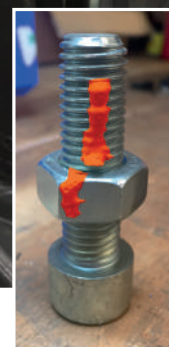
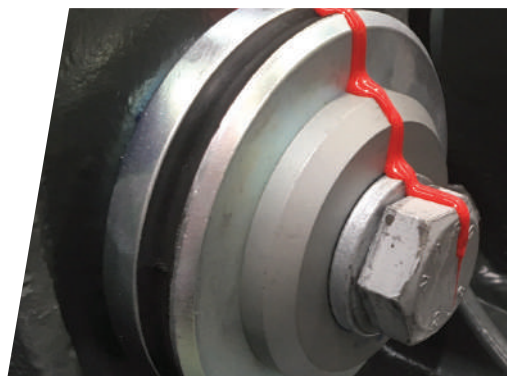
SECURITY CHECK+ PAINT MARKER

HIGH
TEMPERATURE

Provides visual inspection mark for all bolted & coupled connections, no more manual test torquing. Not a bolt locking product but a liquid paint marker formulated to dry on perimeter of a fastener or coupling. When dry, Security Check's mark will "break" if the fastener or coupler's union has been compromised by vibration or by hand tampering. Aerosol, bucket paint or standard liquid paint marks tend to "stretch" when twisted & won't leave a clear visible "break."

Great for visual inspection on train's :

- Main transformer, ventilation system & door assemblies
- Hydraulics systems
- Dome, roof, draw bar, coupling devices & manway covers
- Bogie assembly



SECURITY CHECK ORIGINAL

TORQUE PAINT MARKER

SECURITY CHECK Original provides a convenient visual method for identification of vibratory loosening or tampering in nuts, bolts, fasteners, and assemblies. High visibility paint mark becomes a hard film that breaks easily. Ideal for quality control and warranty work. Safe on most surfaces, adheres perfectly to metal.











SECURITY CHECK+ HIGH TEMPERATURE

HIGH TEMPERATURE RESISTANCE TORQUE PAINT MARKER








SECURITY CHECK+ High Temperature provides a convenient visual method for identification of vibratory loosening or tampering in nuts, bolts, fasteners, and assemblies. High visibility paint mark becomes a hard film that breaks easily. Mark at ambient temperature and the high-performance paint withstands temperatures up to 1000°C. Ideal for quality control and warranty work for brakes or any kind of heating assemblies parts inside engines. Safe on most surfaces, adheres perfectly to metal.



| PART NR. — BOX | | MAX C° |
|---|-------|--------|
| SECURITY CHECK Original | | |
|  | 96668 | 200°C |
|  | 96669 | 200°C |
|  | 96670 | 175°C |
|  | 96671 | 175°C |
|  | 96672 | 175°C |
|  | 96673 | 200°C |
|  | 96674 | 200°C |
|  | 96675 | 175°C |
| SECURITY CHECK+ High Temperature | | |
|  | 97516 | 1000°C |
|  | 97517 | 1000°C |

SECURITY CHECK Original

199013 :

3x  + 3x  + 2x  + 1x  +
1x  + 1x  + 1x 



IDENTIFICATION: IN DIFFICULT, HARSH ENVIRONMENTS



PAINT-RITER® INDUSTRY MARKER SL.100



LIQUID PAINT MARKER FOR GENERAL MARKING

PAINT-RITER® Industry Marker SL.100 is a xylene-free, low-odor fast-drying liquid paint marker that provides long-lasting marks for almost any surface. The 15 opaque, bright colors are weather- and UV-resistant for excellent mark identification.

- 15 colors for excellent mark identification, quality control, and parts inspection
- Strong medium bullet tip resists wear to provide long marking life



| PART NR. — BOX | | | | | | | | | | |
|--|---|----------|---|----------|---|----------|--|----------|---|----------|
|  BOX |  | 31240120 |  | 31240420 |  | 31240720 |  | 31241020 |  | 31241320 |
| |  | 31240220 |  | 31240520 |  | 31240820 |  | 31241120 |  | 31241520 |
| |  | 31240320 |  | 31240620 |  | 31240920 |  | 31241220 |  | 31241620 |



PAINT-RITER®+ OILY SURFACE HP



















LIQUID PAINT MARKER FOR OILY SURFACE MARKING

PAINT-RITER®+ Oily Surface HP is a liquid paint marker developed for superior marking performance on oily and greasy surfaces. The high performance paint penetrates through oils and greases to dry quickly and leave a bold, permanent mark that is wear-, weather-, and fade-resistant.

- Durable metal barrel and nib
- IMDS registered product



| PART NR. — BOX | | | | | | | | | |
|---|---|---|---|--|---|---|--|--|--|
|  |  96960 |  96965 |  96964 |  96975 |  96967 |  | | | |
| |  96961 |  96966 |  96974 |  96971 |  96972 | | | | |
| |  96962 |  96963 |  96973 |  96970 | | | | | |



PAINT-RITER®+ WATER ERASE SL130














REMOVABLE LIQUID PAINT MARKER FOR TEMPORARY MARKING

PAINT-RITER®+ Water Erase SL.130 is a crayon-based liquid paint that easily wipes away with water from any smooth, non-porous surface without leaving a ghost trace or residue once the mark is removed.

- Marks can be easily wiped away with water
- 9 bright colors including 4 fluos are excellent for temporary mark identification, quality control, and parts inspection



| PART NR. — BOX | | | | | | | | | | |
|--|---|----------|---|----------|---|----------|---|----------|---|----------|
|  BOX |  | 31200126 |  | 31200326 |  | 31200526 |  | 31201926 |  | 31201826 |
| |  | 31200226 |  | 31200426 |  | 31200626 |  | 31202026 | | |







STYLMARK ORIGINAL

BALL TUBE MARKER FOR MULTIPLE SURFACES

STYLMARK Original is a metal-ball tip marker for marking most surfaces. The aluminum squeeze tube and thick paint makes it suitable for rough, vertical and overhead surfaces with excellent adhesion on oily and wet surfaces. Xylene-free paint reduces user health risks.



| | PART NR. | 2MM | 6MM | 3MM | | 2MM | 6MM | 3MM | | 2MM | 6MM | 3MM |
|--|----------|-------|-------|-------|--|-------|-------|-------|--|-----|-----|-------|
| | | 96640 | 96664 | 96652 | | 96645 | 96683 | 96658 | | - | - | 96662 |
| | | 96641 | 96665 | 96653 | | 96643 | 96667 | 96655 | | - | - | 96659 |
| | | 96642 | 96689 | 96654 | | - | - | 96656 | | - | - | 96661 |
| | | 96644 | 96682 | 96657 | | - | - | 96660 | | | | |























PAINTSTIK® ORIGINAL B®

MULTI-PURPOSE PERMANENT SOLID PAINT CRAYON

As Markal's most versatile and economic marker, the Paintstik® Original B® solid paint marker combines the durability of paint in the convenience of a crayon. The real paint formula has superior marking performance on oily, icy, wet, dry or cold surfaces and is weather- and UV-resistant. This Paintstik® works on rough, rusty, smooth, or dirty surfaces.



- Superior marking on rough, rusty, or dirty surfaces
- Weather- and UV-resistant for long-lasting marks
- Available in 3 sizes: 9,5mm, 12,7mm, 17mm

| PART NR. — BOX | | | | | | | | | | | | |
|--|---|-------|---|-------|---|-------|---|---------|---|---------|---|---------|
|  BOX |  | 80220 |  | 80225 |  | 80224 |  | 80227 |  | A 80232 |  | F 82842 |
| |  | 80221 |  | 80226 |  | 80228 |  | 80229 |  | F 82831 |  | F 82835 |
| |  | 80222 |  | 80223 |  | 80230 |  | S 80233 |  | F 82832 |  | F 82836 |
| | | | | | | | | | | |  | F 82834 |



QUIK STIK®+ OILY SURFACE






FAST-DRYING SOLID PAINT IN TWIST-UP HOLDER FOR OILY AND WET SURFACES

QUIK STIK®+ Oily Surface solid paint markers are specially designed for challenging industrial environments where marking on oily and wet surfaces is needed. Additionally, they leave long lasting marks that dry quickly on dry surfaces.



- Industrial-grade paint formula for exceptional performance on oily and wet surfaces. Also writes on dry, smooth or rough surfaces
- Fast-drying, vibrant paint marks dry in 30 seconds to 1 minute on dry surfaces - does not smear when over stacking



| PART NR. — BOX | | | | | | | | |
|---|---|-------|---|-------|---|-------|---|-------|
|  |  | 28880 |  | 28881 |  | 28882 |  | 28883 |
| | | | | | | | | |





DURA-INK® DUAL TIP

DUAL-SIDED INDUSTRIAL INK MARKER THAT PROVIDES THE CONVENIENCE AND VALUE OF TWO MARKERS IN ONE

Experience the versatility of DURA-INK® Dual Tip permanent ink markers and conveniently create both fine and micro-sized marks with one marker instead of two. Versatile, two tip design can tackle jobs both big and small, and the industrial-strength ink writes on most any surface - allowing for faster, more efficient marking in a variety of applications.



PART NR.— BOX



■ 96282
■ 96283

HOT BOX ALARMS CAUSE

All trains have axle journal boxes that contain roller bearings designed to bear the weight of the train, hold the wheels in alignment to the rails & allow the axle in the bogie assembly to turn freely.

If not properly maintained, the bearing will wear & produce heat leading to smoke, distortion, axle freeze up & in extreme cases, derailment.

To detect bearing failure while the train is in motion, infrared hotbox sensor systems are used along the railways to detect high temperatures in wheel bearings, axle & brakes as the train passes.

HBD (hot box detection) alarms will trigger & notify the train's engineer/conductor in real time.

On-board crew will use a Tempilstik to check the temperature axles on each side.



THE ALUMINOTHERMIC WELDING PROCESS

Rails can be welded using a technique known as aluminothermic welding, also called thermal welding. Aluminothermic welding is a process in which a chemical reaction between aluminum powder and iron oxide generates heat, producing molten steel that fills the space between two rail ends to form a continuous welded rail.

The aluminothermic welding of rails involves the following steps:

- **Preparation:** The rail ends are first cleaned and cut to ensure they are square and fit together well.
- **Mold assembly:** A mold is assembled around the rail ends to be welded. The mold is made of a refractory material and is designed to contain the molten metal generated during the welding process.

Preheating: The rail ends and the mold are preheated to a specific temperature to prevent the molten metal from solidifying too quickly: **SNCF has approved/certified 4 temperatures of Tempilstiks as part of the verification of reaching the desired temperature.**

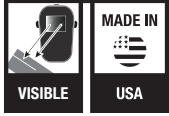
- **Ignition:** The mixture of aluminum powder and iron oxide, called thermite, is placed in the mold and ignited. The thermite reaction generates intense heat that raises the temperature of the molten metal to about 2,500 °C.
- **Casting:** The molten steel is then poured into the mold, filling the space between the rail ends and creating a continuous welded rail.
- **Finishing:** once the molten metal has cooled and solidified, the mold is removed and the excess metal is removed. The rail is then ground to achieve a smooth finish.

Aluminothermic welding is a popular method for welding rails due to its high strength and durability. It is widely used in the railway industry worldwide to weld new rails, repair existing rails, and assemble rails on railway tracks.





VERIFICATION SOLUTIONS



TEMPILSTIK®



FAST, ACCURATE SURFACE TEMPERATURE INDICATOR

Providing accuracy, confidence and compliance for over 80 years, Tempilstik® is the original temperature-indicating stick with the best combination of precision and convenience for surface temperature measurement. Specially engineered for accurate temperature indication in pre-heating, interpass and post-weld heat treating applications, Tempilstik® is the industry's leading choice for use in the most critical jobs. Please note that the color of the Tempilstik® are not a part of their function, since the temperature signal consists of melting. Indicator color is subject to change without notice.

- 116 temperatures available from 100°F(38°C) to 2000°F(1093°C)

- Accurate to within +/- 1% of Fahrenheit and +/- 3% Celsius rated

SNCF approved temperatures for aluminothermic rail repair/replacement.

| | PART NR. | T°C — CELSIUS | T°F — FAHRENHEIT | | PART NR. | T°C — CELSIUS | T°F — FAHRENHEIT |
|--|----------|---------------|------------------|--|----------|---------------|------------------|
| | 28006 | 66 °C | 150 °F | | 28034 | 198 °C | 388 °F |
| | 28007 | 73 °C | 163 °F | | 28046 | 302 °C | 575 °F |
| | 28305 | 75 °C | 167 °F | | 28048 | 343 °C | 650 °F |
| | 28012 | 93 °C | 200 °F | | 28050 | 399 °C | 750 °F |
| | 28309 | 95 °C | 203 °F | | | | |
| | 28013 | 97 °C | 206 °F | | | | |



Accurate Temperatures

Accurate to within +/- 1% of Fahrenheit and +/- 3% Celsius rated
Imprinted part number, temperature and lot code across entire stick
for improved traceability

100% Reliability

Calibration-free with 100% reliability

Melts Instantly

Stick instantly melts at designated temperature for easy and immediate visual inspection

PROTECTIVE SOLUTIONS



BLOXIDE®

AN ALUMINUM-BASED WELDABLE PRIMER

Bloxide® is a versatile weldable primer with a unique aluminum-based formula that eliminates cleaning or removal before welding, thus saving time and labor costs. Enhanced by corrosion preventative features, Bloxide® can be applied to a wide range of metals for extended periods of storage, assisting in producing X-Ray quality welds.

- Enhanced corrosion resistance for extended periods of storage
- Aluminium-base formula allows for welding without removal, reducing downtime and rework contamination
- High temperature resistant to 800°F (427°C)



| | PART NR. | |
|--|----------------|-----------------------|
| | 24100 | 24104 |
| | Bloxide 3,79 L | Bloxide 355ml (spray) |





MARKAL[®]

THE MARK OF WORK[™]

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