



FIRE PROTECTION COATING FOR STRUCTURAL STEEL SECTIONS

TECHNICAL DATA SHEET HENSOTHERM® 471 KS

- Water-based 1C system
- Free from halogens, APEO, borates, plasticizers and silicones
- Approved according to BS 476, Certifire No. CF 5344
- Fire resistance rates from R 15 up to R 180 for open and hollow profiles

TECHNICAL INFORMATION

Approval/Classification

- Approved according to BS 476
- Certifire Certificate No. CF 5344

Application Area

- For indoor use only
- Structural steel profiles as columns/beams/girders/I-/H-sections
- R 15 – R 180 open steel profiles
- R 15 – R 180 hollow sections
- Up to R 180 usable without top coat in dry indoor conditions¹⁾ according to BS 476
- Coated steel components shall not be receive coverings or miscellaneous jackets which prevent the intumescent fire protection coating from foaming/expanding! Only those components may be connected force-fit, which comply with the same fire resistance rate.

Instructions for Application

- The coating system consist of primer HENSOGRUND*, fire protection coating HENSOTHERM® 471 KS and top coat HENSOTOP*
- The coating system should only be applied by trained staff!
- System should be preferably applied and dried at a temperature above +10 °C and at a relative humidity below 80 %
- Surface temperature should be at least +5 °C above dew point, during application see Corrosion Protection Standard EN ISO 12944 -7
- In line with good painting practice, application should not take place in conditions which are deteriorating, e.g. where the temperature is falling or where there is a risk of condensation forming on the steel
- Steel surface should not be warmer than +35 °C during application and drying time
- **The ambient conditions during application must be documented in a report according to EN ISO 12944-7 and -8**

Shop Application

The temperature of the steel surface and the ambient temperature has to be between min. +10 °C and max. +35 °C. For further questions, please contact our technical support team.

Surface Preparation/Primer

Bare Profiles

- Sandblasting Sa 2.5 according to EN ISO 12944-4, then application of primer HENSOGRUND AQ*, HENSOGRUND 1966 E* or HENSOGRUND 2K EP* also recommended for cast steel
- Manual cleaning possible, PSt 2 according to EN ISO 12944-4, after manual cleaning application of HENSOGRUND 1K AK*

Primed Profiles

- HENSOTHERM® 471 KS is designed to be applied over suitable prepared and primed substrate
- The compatibility between HENSOTHERM® 471 KS and unknown already applied primers need to be checked; any damage (corrosion, impact e.g.) must be repaired carefully with the particular type of primer used or other compatible primers

Before the application of HENSOTHERM® 471 KS already primed

surfaces must be checked for damages and dry film thickness if they have been exposed to the weather for longer. If necessary, repair work is needed! For further information see Technical Data Sheets for HENSOGRUND primers.

Galvanized Profiles

- Surface has to be cleaned to remove contamination and to ensure adhesion, then priming with HENSOGRUND AQ* or HENSOGRUND 2K*
- Galvanized components must be tempered (heated) before coating with HENSOGRUND 2K (Blistering!)

Application

Before application stir up thoroughly with slow speed! Immediate cleaning of equipment after use with water!

Airless Spraying

- A material temperature of about +20 °C is recommended for achieving an optimal spraying behaviour and result
- If needed thinning with max. 3% water
- Recommended operation pressure 200 – 250 bar
- Nozzle size 0.017" – 0.025"; flow rate > 4 l/min
- All filters should be removed
- Recommended coverage rate for the 1st layer on a primed surface 500 g/m² (approx. 250 µm dry film thickness)
- Each further layer can be applied with up to 1,000 g/m² (approx. 500 µm dry film thickness)
- Typical coverage rate of HENSOTHERM® 471 KS applied in one layer depends on the type of steel profile and the position within construction

Brushing and Rolling

- Rolling by lambskin or foam roller, brushing with long-bristled Chinex-bristle

Drying Time

- The drying time depends on temperature and relative humidity
- At a temperature of approx. +20 °C and a relative humidity of approx. 65% the drying time for each layer (up to 1,000 g/m²) is at least 24 hours till next application
- Each layer must be dried through (fingernail test positive) before the next application
- Lower temperatures, higher relative humidity and insufficient air movement can prolong drying time

Top Coats

HENSOTOP top coats offer the possibility of colored design, protection against moisture and should be applied when the surfaces, during the usage, are exposed to environmental influences, regular cleaning and similar external influences. Do not apply the top coat before the HENSOTHERM® fire protection coating is fully dried! At the earliest after 24 hours and after a positive fingernail test. Usage without top coat is possible, but only in dry indoor conditions without condensation. If steel surfaces are regularly exposed to intense heat/high temperatures, do not use dark colours as a top coating. HENSOTOP top coats are available in RAL or NCS colour shades and on request in individual colour shades.

For HENSOTHERM® 471 KS the following top coats* are compatible: HENSOTOP WB, HENSOTOP SB, HENSOTOP 2K PU

TECHNICAL INFORMATION

Storage and Transport

- Storage and Transport free from frost!
Preferably at a minimum of +5 °C to a maximum of +30 °C
- Shelf life of unopened pails: 12 months
- Opened pails must be sealed carefully after use!

Packaging

25 kg plastic pails, other sizes on request

Precautions for Safety Use

Use HENSOTHERM® 471 KS in accordance with all applicable local and national regulations.

Giscode: M-DF01

Environment, Health and Safety

As regulations are often revised please request for the actual Material Safety Data Sheet before using the product.

¹⁾ If surfaces are exposed to cleaning the use of the top coat HENSOTOP is mandatory!

* Please consult the respective technical data sheet!

In case of any questions please contact our technical support team! For full product documentation and other information to download please visit our website www.rudolf-hensel.de

QUALITY MARKS



European Organisation
for Technical Assessment



Member of
DGNB

Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council



SGBP 2018-2044



LEED v4

HENSOTHERM® 471 KS | R 15 – R180

Water-based 1C system, maintenance-free, for indoor use

Environmental Benefits

- Water-based intumescent coating system
- Free from halogens, APEO (alkylphenol ethoxylates), borates, plasticizers and silicones
- Non-VOC acc. to ISO 11890-2, LEED v4 confirmed

Technical Performance

- Optimal surface appearance by application with airless spraying achievable; long fire resistance rates with low layer thicknesses; maintenance-free
- Approved also for the use on galvanized profiles
- Top coat in RAL/NCS or individual colour shades available
- Suitable for shop application (fast drying)
- Physical life according to ETAG No. 018-1 up to 25 years, can be prolonged for special projects
- Open profiles up to Hp/A 470 m⁻¹ and hollow profiles up to Hp/A 400 m⁻¹ (Tcrit. 500 °C)
- Specific gravity: 1,34 kg/l, volume solids: 72% ± 3% (measured acc. to ISO 3233), VOC: <1 g/l, theoretical coverage: 1.39 l/m² | 1 mm DFT, colour: white

Additional

- High efficiency due to low material consumption/low coverage rates and fast drying times
- Monitored by independent third party institutes

The information provided herein reflects the current state of our technical testing and experience with the use of this product. However, the buyer/user is hereby not relieved of their duty, at their own responsibility, to properly examine our materials for their suitability for the intended use based on the respective site conditions. Legal claims for damages arising from the use of this product for purposes other than, or in a manner that differs from, the description contained herein without our prior written approval are precluded and may not be asserted against us. In light of the circumstance that we have no influence over site conditions and various factors that could influence the performance and use of our product, a guarantee of results or liability, regardless of legal grounds, cannot be derived from this information or from verbal consultation provided by one of our employees unless we may be accused of intent or gross negligence. Our General Terms and Conditions apply for all other purposes (www.rudolf-hensel.de/gtc). The most recent version of our technical data sheet is valid and may be requested from the Rudolf Hensel GmbH or downloaded at www.rudolf-hensel.de. © Rudolf Hensel GmbH – Origin of photo material: Rudolf Hensel GmbH



RUDOLF HENSEL GMBH

Lack- und Farbenfabrik

Lauenburger Landstraße 11
21039 Börnsen | Germany

Tel. +49 40 72 10 62-10

Fax +49 40 72 10 62-52

Technical Support / Sales -48

E-Mail: info@rudolf-hensel.de

Internet: www.rudolf-hensel.de





SINGAPORE GREEN BUILDING PRODUCT CERTIFICATE

AWARDED TO

ISOTEAM C&P PTE LTD

8 Changi North Street 1
ISOTEAM Building
Singapore 498829

FOR THE PRODUCT

Intumescent Coating

PRODUCT BRAND

HENSEL

PRODUCT MODEL

Hensotherm 471 KS

THE PRODUCT HAS BEEN ASSESSED ACCORDING
TO THE ASSESSMENT CRITERIA OF THE SINGAPORE
GREEN BUILDING PRODUCT CERTIFICATION SCHEME.
IT HAS BEEN AWARDED THE RATING :

Director
SGBC Pte Ltd

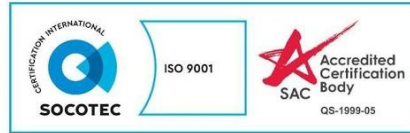


| Certificate Number | Original Issue Date | Last Revision Date | Valid Till |
|--------------------|--------------------------------|----------------------------|--------------------------------|
| SGBP 2018-2044 | 13 th December 2018 | 7 th March 2019 | 12 th December 2020 |

✓ Good ✓✓ Very Good ✓✓✓ Excellent ✓✓✓✓ Leader

The use and reliance on this certificate is subject to the terms and conditions of the Singapore Green Building Product Certification Scheme. Revised certificates may also be issued at the discretion of the Council. The certification status may be verified at the Singapore Green Building Council website (www.sgbc.sg).





ISOTEAM C&P

FP Division | Projects Reference

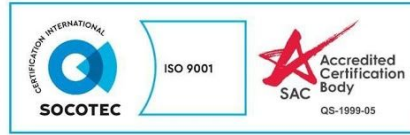
Rudolf Hensel - Hensotherm 471ks

| PROJECT | CLIENT | COMMENCE | COMPLETE |
|---|-------------------------------|----------|----------|
| DTP2 Control Room at Tuas | DLE Engrg | 2017 | 2017 |
| Wellington | Shin Khai Construction | 2017 | 2017 |
| Chestnut Observation | Shin Khai Construction | 2017 | 2017 |
| Wing Tuck (Tampines Petrol Kiosk)/ replaced by MS11 | Wing Tuck Engrg | 2017 | 2017 |
| Commonwealth Church Steel Staircases | Wing Tuck Engrg | 2017 | 2017 |
| Conrad Hotel A&A | Vigcon Construction | 2017 | 2017 |
| Munipharma | G-Tech | 2017 | 2017 |
| Supreme Court Columns at Level 7 | Supreme Court | 2017 | 2017 |
| Arlanxeo at Jurong Island | G-Tech | 2017 | 2017 |
| Coca Cola Project | Hup Lian | 2017 | 2017 |
| 44 Tanjong Penjuru | Fastweld Engrg & Constrn | 2017 | 2017 |
| GSK (Intumescent) | G-Tech | 2017 | 2017 |
| 1A Jalan Cherpen (intumescent) | Jin Quek Interior | 2017 | 2017 |
| DB at 30 Tuas Ave 2 (Intumescent) | G-Tech | 2017 | 2017 |
| Red Dot A&A Project | Guan Ho Const | 2017 | 2018 |
| Stirling Condo | China Construction | 2018 | 2018 |
| Boy's Complex | China Construction | 2018 | 2018 |
| Raffles Girl School | Sunray Woodcraft | 2018 | 2018 |
| 6 Senoko Food Factory | Jinmac | 2018 | 2018 |
| REC | Uni-prosper Construction | 2018 | 2018 |
| State Court | Eversendai | 2018 | 2018 |
| NAS | Sunray Woodcraft | 2018 | 2018 |
| Moral Home (Phase 1/3) | Wan Chung Construction | 2018 | 2018 |
| Oxley Otto Mechanised Car Park | Oxley Otto | 2018 | 2018 |
| DOJO | Foo Heng Engrg | 2018 | 2018 |
| 147 Moulmein road | Glory Construction | 2018 | 2018 |
| 20 Crowhurst Drive | Absolute Rope Access | 2018 | 2018 |
| Boon Keng Linkbridge | Foo Heng Engrg | 2018 | 2018 |
| Paya Lebar Square | Boon Chang Engrg | 2018 | 2018 |
| Alcon | G-Tech | 2018 | 2018 |
| Micron CUPS Building | G-Tech | 2018 | 2018 |
| Micron Fab. Building | Yongnam | 2018 | 2018 |
| Cleantech NTU | Konghwee | 2018 | 2018 |
| SAF YACHT CLUB- Yacht Stack Yard Steel Structure | Vigcon Construction | 2018 | 2018 |
| F1 Pit Building Structure Upgrading Works | F1 Management team | 2018 | 2018 |
| SMRT (8 Stations) | Sunray | 2018 | 2018 |
| China Mobile Data Centre | China Construction | 2018 | 2018 |
| 139 Cecil Street | Lim Wen Heng Constrn | 2018 | 2018 |
| Micron Fab Building | Sentat Engineering | 2018 | 2018 |
| Orchard Shophouse | Sunray | 2018 | 2018 |
| Hougang HBD Sub-station | Isoteam Raymond Construction | 2019 | 2019 |
| Wetscience Building Linkbridge | Konghwee | 2019 | 2019 |
| Siltronic | Sentat Engineering | 2019 | 2019 |
| T301 Depot | TTJ | 2019 | On-going |
| Microns linkbridge Phase 1, 2, 3 & 4 | Sentat Engineering | 2019 | 2019 |
| Cummins at No. 85 Tuas South Ave 1 | Boustead Projects E&C Pte Ltd | 2019 | 2019 |

TOWARDS A GREENER FUTURE

ISOTEAM C&P PTE. LTD.

8 Changi North Street 1, ISOTEAM Building, Singapore 498829 T: +65 6747 0220 F: +65 6747 0110 W: www.isoteamcp.com.sg W: www.isoteam.com.sg Co. Reg. No. 199600630K



| | | | |
|---|-------------------------------|------|----------|
| Solaris | GS Metal | 2019 | 2019 |
| Mandai Night Safari MSCP | Sunray Woodcraft | 2019 | 2019 |
| Punggol Primary School | Tiong Seng | 2019 | 2019 |
| Kallang Poly Clinic | Tiong Seng | 2019 | 2019 |
| Medtronic | G-Tech | 2019 | 2019 |
| Funan | Forward 50 | 2019 | 2019 |
| Micron LinkBridge -East (Pipe Support) | Prime Structure | 2019 | 2019 |
| Singapore Polytechnica Cultural Centre | Singapore Polytechnic | 2019 | 2019 |
| Makeway Showflat @ Makeway Avenue | Seah Kim Cheok Construction | 2019 | 2019 |
| Moral Home (Phase 3/3) | Wan Chung Construction | 2019 | 2020 |
| Shimano | Takenaka Construction | 2020 | On-going |
| Serangoon North Commercial Building | PBT Engrg | 2019 | 2019 |
| Changi Naval Base | TTJ | 2019 | 2020 |
| Pasir Ris Site Office | ISOTEAM Corporation Ltd | 2019 | 2019 |
| Punggol Primary School | Tiong Seng | 2019 | 2019 |
| Kallang Poly Clinic | Tiong Seng | 2019 | 2019 |
| Woodlands MRT | GS Engineering | 2019 | 2019 |
| Temporary Containers/ Storage for Site Office & Store | ISOTEAM Corporation Ltd | 2019 | 2019 |
| Riverval Community Centre | kim seng heng | 2019 | 2019 |
| Swiss Club A&A | Sunray Woodcraft | 2019 | 2019 |
| ICH | Konghwee | 2019 | 2019 |
| Hub Synergy Building | Eversendai | 2019 | 2019 |
| Balestier Mechanised Car Park | Oxley Otto | 2019 | 2019 |
| New Tech Park | Sunray Woodcraft | 2019 | 2019 |
| 31 Victoria Street | PT & G | 2019 | 2019 |
| Project Majulah | G-Tech | 2020 | 2020 |
| Temporary Containers/ Site Office & Store (Pasir Ris) | ISOTEAM Raymond Construction | 2020 | 2020 |
| Kranji Reclamation Plant | Sanli M&E Engineering Pte Ltd | 2020 | 2020 |
| 119A Rivervale Container | ISOTEAM Raymond Construction | 2020 | 2020 |
| Perankan Museum | Shin Khai Construction | 2020 | On-going |
| Microns CUP Building Phase 1 | G-Tech | 2020 | On-going |
| Wilmar HQ | Boustead | 2021 | 2021 |
| GSJR | Wan Chung | 2021 | 2021 |
| Tuas Dormitory | Tiong Seng | 2020 | On-going |
| Drone Facility | Steadfast Engineering | 2021 | 2021 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |





HI-PON 20-07 EPOXY ZINC PHOSPHATE 70

TECHNICAL DATA SHEET

PRODUCT DESCRIPTION

Hi-Pon 20-07 Epoxy Zinc Phosphate 70 Two-pack high build, fast drying zinc phosphate epoxy coating.

INTENDED USE

Universal anti-corrosive for all areas according to ISO 12944.

An anti-corrosive primer and / or intermediate coating for corrosion protection of steel and other substrates in atmospheric exposure.

GENERAL PROPERTIES

| | |
|--------------------------|--|
| Colour | : Buff & Red |
| Gloss Level | : Low sheen |
| Volume Solids, % | : 72 ± 2 % |
| Specific Gravity | : 1.46 - 1.56 kg/l (Mixed) |
| Flash point | : Base: 33°C Hardener: 35°C Mix: 33°C |
| VOC | : 260 g/L (mix, by calculation) |
| Typical Thickness | : 100 - 250µm dry film : 140 - 360µm wet film |

SURFACE PREPARATION

All surfaces should be clean and free from contamination. The surface should be assessed and treated in accordance with ISO 8504. Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Bare steel

Bare steel should be prepared with abrasive blast cleaning to Sa 2½ (ISO 8501-1:2007), to achieve surface profile 50 – 70 µm.

Other Surfaces

The coating may be used on other substrates. Please contact your local Nippon Paint office for more information.

CONDITION DURING APPLICATION

Avoid paint application when the temperature is below 10°C or relative humidity exceeds 85%. The Steel surface temperature must be minimum 3°C above dew point of the surrounding air.

APPLICATION GUIDE

| | |
|-----------------------|--|
| Mixing Ratio | : Base: hardener = 4:1 (by volume) Base and hardener should be mixed thoroughly before use. |
| Induction time | : 15mins |
| Pot Life | : 25°C |



HI-PON 20-07 EPOXY ZINC PHOSPHATE 70

TECHNICAL DATA SHEET

2 Hrs

Theoretical Coverage : 7.2 m²/litre at 100 µm DFT
: 2.9 m²/litre at 250 µm DFT

Thinner : Hi-Pon Epoxy Thinner

APPLICATION METHOD

Brush and roll is suitable for stripe coating and very small areas. For best result, use airless spray. Care must be taken to achieve the specified dry film thickness.

APPLICATION DETAILS

Airless Spray : Tip Size : 0.017" – 0.027"
Pressure at nozzle : 150 - 170 kg/cm²

Typical Thickness : 100 - 250µm dry film
: 140 - 360µm wet film

Drying Time : Substrate Temperature : 25°C 40°C
Surface Dry : 1hrs 0.5hrs
Through Dry : 3hrs 2hrs
Cured : 7days 3days
Dry to recoat (min) : 3hrs 2hrs
Dry to recoat (max) : 3mths 3mths

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.

RECOMMENDED PAINTING SYSTEM

The following Intermediate/Topcoat are recommended for Hi-Pon 20-07:

Intermediate

- Hi-Pon 20-04 STE 80
- Hi-Pon 20-04 STE AL 80
- Hi-Pon 20-04 STE GF 80
- Hi-Pon 20-04 STE MIO 80
- Hi-Pon 30-01 Epoxy Midcoat 70
- Hi-Pon 30-02 Epoxy MIO 80
- Hi-Pon 30-03 Epoxy Midcoat 80
- Hi-Pon 30-04 Epoxy MIO 70



HI-PON 20-07 EPOXY ZINC PHOSPHATE 70

TECHNICAL DATA SHEET

Topcoat

- Hi-Pon 40-02 Epoxy Topcoat
- Hi-Pon 40-04 Epoxy Topcoat
- Hi-Pon 50-01 Polyurethane Topcoat

For the choice of coating system for different application, refer to the product brochure or contact Nippon Paint for professional recommendation.

PACKAGING

| Unit | Base | | Hardener | |
|------|------|----------------|----------|----------------|
| | Vol | Container Size | Vol | Container Size |
| 20L | 16L | 20L | 4L | 5L |
| 5L | 4L | 5L | 1L | 1L |

STORAGE

Shelf life : Part A: 12 months (25°C)
Part B: 12 months (25°C)

Subject to re-inspection thereafter. Higher temperature during storage may reduce the shelf life and may lead to gelling in the tin.

Store in tightly closed container in a dry, cool and well ventilated space, keep away from sources of heat and ignition.

SAFETY PRECAUTION

- This product is intended for use of professional applicators. Refer to the safety information display on the container and in the safety data sheet (SDS) before using the product.
- Use this product in well-ventilated area, avoid skin contact, spillage on the skin should immediately be removed with suitable cleanser, soap and water.
- Eye should be well flush with water and seek for medical attention immediately upon contact with this product.
- During the application, naked flame, welding operation and smoking is not allowed. Adequate ventilation should be provided.
- If you have any doubt regarding the suitability of use, refer to Nippon Paint for further advice.

DISCLAIMER

The information in this data sheet is given to the best of Nippon Paint's knowledge and practical experience. Users may consult with Nippon Paint on the general suitability of the product for their needs and specific application practices though it remains each user's responsibility to determine the suitability of the product for the user's particular use. The condition of the substrate and application are not within Nippon Paint's control. Therefore no implied conditions,



HI-PON 20-07 EPOXY ZINC PHOSPHATE 70

TECHNICAL DATA SHEET

warranties or other terms will apply to the Product. Nippon Paint does not and cannot warrant the results which the user may obtain by using the product. In no event will Nippon Paint be liable to the user for any kind of loss (whether direct or indirect) even if Nippon Paint was previously advised of it. In line with Nippon Paint's policy for continuous development, Nippon Paint reserves the right to modify the product and the information in this data sheet without prior notice. It is the user's responsibility to check with Nippon Paint for the latest version of this data sheet. This data sheet has been translated into various languages. In the event of any inconsistency, the English version shall prevail.



HI-PON 30-03 EPOXY MIDCOAT 80

TECHNICAL DATA SHEET

PRODUCT DESCRIPTION

Hi-Pon 30-03 Epoxy Midcoat 80 is a two component, high solids, fast dry epoxy coating. It provides a high build barrier coating that gives excellent adhesion, surface wetting properties and anti-corrosive properties. Winter grade can provide excellent application in lower temperatures.

INTENDED USE

As a middle coat for bridges, tanks external and other steel structures used in severe corrosive environments, or pipelines, equipments, machinery and steel structures in chemical factory and power plant.

GENERAL PROPERTIES

| | |
|--------------------------|---|
| Colour | : White & Grey |
| Gloss Level | : Matt |
| Volume Solids, % | : 80 ± 2 % |
| Specific Gravity | : 1.70 – 1.80 kg/l (Mixed) depending on colours |
| Flash point | : Base: 34°C Hardener: 25.5°C Mix: 30°C |
| VOC | : 208 g/L (mix, by calculation) |
| Typical Thickness | : 80 – 200 µm dry film : 100 – 250 µm wet film |

SURFACE PREPARATION

All surfaces should be clean, dry and free from contamination. The surface should be assessed and treated in accordance with ISO 8504. Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Damaged Area

Damage area should be prepared with abrasive blast cleaning to Sa 2½ (ISO 8501-1:2007). When abrasive blasting is not possible, mechanical cleaning to St 3 (ISO 8501-1:2007) is acceptable. After the surface preparation, patch primer prior to the application of Hi-Pon 30-03.

Hi-Pon 30-03 should always be applied over a recommended anti-corrosive coating scheme for metal surface. The primer surface should be dry and free from oil and other contaminations. It must be applied within the overcoating intervals specified (refer to application section for details).

Other Surfaces

The coating may be used on other substrates. Please contact your local Nippon Paint office for more information.

CONDITION DURING APPLICATION

Avoid paint application when the relative humidity is over 85%. The temperature of steel surface must be a minimum 3°C above dew point of surrounding air. Use Standard grade when temperature is between 15°C to



HI-PON 30-03 EPOXY MIDCOAT 80

TECHNICAL DATA SHEET

45°C. Change to Winter grade when temperature is between -5°C to 15°C.
Stop application once the temperature is below -5°C or above 45°C.

APPLICATION GUIDE

Mixing Ratio : Base: Hardener 3 : 1 (by weight)
2.8 : 1 (by volume) Winter
3 : 1 (by volume) Standard

Base and hardener should be mixed thoroughly before use.

Pot Life : 25°C 15°C
4 Hrs/Standard grade 2 Hrs/Winter grade

Theoretical Coverage : 4.0 m²/litre at 200µm DFT

Thinner : Hi-Pon Epoxy Thinner

APPLICATION METHOD

Brush and roll is suitable for stripe coating and very small areas. For best result, use airless spray. Care must be taken to achieve the specified dry film thickness.

APPLICATION DETAILS

Airless Spray : Tip Size : 0.017" – 0.031"
Pressure at nozzle : 180 – 200 kg/cm²

Typical Thickness : 80 – 200 µm dry film
: 100 – 250 µm wet film

Drying Time

| | Standard grade | |
|-----------------------|-----------------------|--------|
| Substrate Temperature | : 25°C | 40°C |
| Surface Dry | : 1.5hrs | 0.5hrs |
| Through Dry | : 6hrs | 3hrs |
| Cured | : 7days | 3days |
| Dry to recoat (min) | : 6hrs | 3hrs |
| Dry to recoat (max)* | : Extended | |

| | Winter grade | |
|-----------------------|---------------------|--------|
| Substrate Temperature | : 0°C | 10°C |
| Surface Dry | : 3hrs | 1.5hrs |
| Through Dry | : 3days | 13hrs |
| Cured | : 14days | 7days |
| Dry to recoat (min) | : 3days | 13hrs |
| Dry to recoat (max) | : 30days | 14days |



HI-PON 30-03 EPOXY MIDCOAT 80

TECHNICAL DATA SHEET

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.
* Where an "extended" overcoating time is stated, consult Nippon Paint Protective Coatings for recommended surface preparation to achieve optimal intercoat adhesion.

RECOMMENDED PAINTING SYSTEM

The following Primer/Topcoats are recommended for Hi-Pon 30-03:

Primer

- Zinky-12 Inorganic ZN Rich Primer 77
- Zinky-13 Inorganic ZN Rich Primer 85
- Zinky 25 Epoxy ZN Primer 45
- Zinky 26 Epoxy ZN Primer 65
- Zinky-21 Epoxy ZN Rich Primer 77
- Zinky-22 Epoxy ZN Rich Primer 80
- Hi-Pon 20-01 Epoxy Primer
- Hi-Pon 20-03 Epoxy Red Oxide Primer
- Hi-Pon 20-04 STE 80
- Hi-Pon 20-04 STE AL 80
- Hi-Pon 20-07 Epoxy ZN Phosphate 70
- Hi-Pon 20-10 Epoxy ZN Phosphate 63

Topcoat

- Hi-Pon 40-02 Epoxy Topcoat
- Hi-Pon 40-04 Epoxy Topcoat
- Hi-Pon 50-01 Polyurethane Topcoat
- Hi-Floro 6738 Fluorocarbon Top Coat

For the choice of coating system for different application, refer to the product brochure or contact Nippon Paint for professional recommendation.

PACKAGING

| Unit | Base | | Hardener | |
|------|-------|----------------|----------|----------------|
| | Vol | Container Size | Vol | Container Size |
| 17L | 12.7L | 20L | 4.3L | 5L |

STORAGE

Shelf life : Part A: 12 months (25°C)
Part B: 12 months (25°C)



HI-PON 30-03 EPOXY MIDCOAT 80

TECHNICAL DATA SHEET

Subject to re-inspection thereafter. Higher temperature during storage may reduce the shelf life and may lead to gelling in the tin.

Store in tightly closed container in a dry, cool and well ventilated space, keep away from sources of heat and ignition.

SAFETY PRECAUTION

- This product is intended for use of professional applicators. Refer to the safety information display on the container and in the safety data sheet (SDS) before using the product.
- Use this product in well-ventilated area, avoid skin contact, spillage on the skin should immediately be removed with suitable cleanser, soap and water.
- Eye should be well flush with water and seek for medical attention immediately upon contact with this product.
- During the application, naked flame, welding operation and smoking is not allowed. Adequate ventilation should be provided.
- If you have any doubt regarding the suitability of use, refer to Nippon Paint for further advice.

DISCLAIMER

The information in this data sheet is given to the best of Nippon Paint's knowledge and practical experience. Users may consult with Nippon Paint on the general suitability of the product for their needs and specific application practices though it remains each user's responsibility to determine the suitability of the product for the user's particular use. The condition of the substrate and application are not within Nippon Paint's control. Therefore no implied conditions, warranties or other terms will apply to the Product. Nippon Paint does not and cannot warrant the results which the user may obtain by using the product. In no event will Nippon Paint be liable to the user for any kind of loss (whether direct or indirect) even if Nippon Paint was previously advised of it. In line with Nippon Paint's policy for continuous development, Nippon Paint reserves the right to modify the product and the information in this data sheet without prior notice. It is the user's responsibility to check with Nippon Paint for the latest version of this data sheet. This data sheet has been translated into various languages. In the event of any inconsistency, the English version shall prevail.



HI-PON 50-01 POLYURETHANE TOP COAT

TECHNICAL DATA SHEET

PRODUCT DESCRIPTION

Hi-Pon 50-01 Polyurethane Top Coat is two-component, high-build, glossy Aliphatic Acrylic polyurethane coating while incorporating an extensive range of performance characteristics. It provides a highly durable, gloss level and colour retention top coat finish.

INTENDED USE

Hi-Pon 50-01 when applied over such proven priming systems, offers outstanding operational performance including abrasion, chemical and impact resistance and colour/ gloss retention.

GENERAL PROPERTIES

| | |
|--------------------------|---|
| Colour | : Standard colours as per colour cards. Special colours available upon request |
| Gloss Level | : High-gloss |
| Volume Solids, % | : 60 ± 2 % |
| Specific Gravity | : 0.98-1.25 kg/l (Mixed) depending on colours |
| Flash point | : Base: 32°C Hardener: 48°C Mix: 33°C |
| VOC | : 386 g/L (mix, by calculation) |
| Typical Thickness | : 50 - 80µm dry film : 80 - 130µm wet film |

SURFACE PREPARATION

All surfaces should be clean, dry and free from contamination. The surface should be assessed and treated in accordance with ISO 8504.

Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Damaged Area

Damage area should be prepared with abrasive blast cleaning to Sa 2½ (ISO 8501-1:2007). When abrasive blasting is not possible, mechanical cleaning to St 3 (ISO 8501-1:2007) is acceptable. After the surface preparation, patch primer prior to the application of Hi-Pon 50-01.

Hi-Pon 50-01 should always be applied over a recommended anti-corrosive coating scheme for metal surface. The primer surface should be dry and free from all contamination and Hi-Pon 50-01 must be applied within the overcoating intervals specified (refer to application section for details).

Other Surfaces

The coating may be used on other substrates. Please contact your local Nippon Paint office for more information.

CONDITION DURING APPLICATION

Avoid paint application when the temperature is below 10°C and relative humidity is over 85%. The temperature of steel surface must be a minimum 3°C above dew point of surrounding air.



HI-PON 50-01 POLYURETHANE TOP COAT

TECHNICAL DATA SHEET

APPLICATION GUIDE

| | |
|-----------------------------|--|
| Mixing Ratio | : Base: hardener = 4:1 (by volume) Base and hardener should be mixed thoroughly before use. |
| Pot Life | : 25°C 5 Hrs |
| Theoretical Coverage | : 12.0 m ² /litre at 50µm DFT |
| Thinner | : Hi-Pon PU Thinner |

APPLICATION METHOD

Brush and roll is suitable for stripe coating and very small areas. For best result, use airless spray. Care must be taken to achieve the specified dry film thickness.

APPLICATION DETAILS

| | | |
|--------------------------|---|--------------------------------|
| Airless Spray | : Tip Size | : 0.011" – 0.018" |
| | Pressure at nozzle | : 140 – 170 kg/cm ² |
| Typical Thickness | : 50 - 80µm dry film : 80 - 130µm wet film | |
| Drying Time | : Substrate Temperature | : 25°C 40°C |
| | Surface Dry | : 1hr 0.5hrs |
| | Through Dry | : 8hrs 4hrs |
| | Cured | : 5days 2days |
| | Dry to recoat (min) | : 5hrs 2.5hrs |
| | Dry to recoat (max)* | : Extended |

The given data must be considered as guidelines only. The actual drying time/times before recoating may be shorter or longer, depending on film thickness, ventilation, humidity, underlying paint system, requirement for early handling and mechanical strength etc. A complete system can be described on a system sheet, where all parameters and special conditions could be included.
* Where an "extended" overcoating time is stated, consult Nippon Paint Protective Coatings for recommended surface preparation to achieve optimal intercoat adhesion.

RECOMMENDED PAINTING SYSTEM

The following Primer/Intermediate are recommended for Hi-Pon 50-01:

Primer

- Zinky-11 Inorganic ZN Rich Primer 90
- Zinky-12 Inorganic ZN Rich Primer 77
- Zinky-13 Inorganic ZN Rich Primer 85



HI-PON 50-01 POLYURETHANE TOP COAT

TECHNICAL DATA SHEET

- Zinky-21 Epoxy ZN Rich Primer 77
- Zinky-22 Epoxy ZN Rich Primer 80
- Zinky-23 Epoxy ZN Rich Primer 85
- Zinky- 25 Epoxy ZN Primer 45
- Zinky- 26 Epoxy ZN Primer 65
- Hi-Pon 20-01 Epoxy Primer
- Hi-Pon 20-03 Epoxy Red Oxide Primer
- Hi-Pon 20-04 STE 80
- Hi-Pon 20-04 STE AL 80
- Hi-Pon 20-04 STE GF 80
- Hi-Pon 20-04 STE MIO 80
- Hi-Pon 20-07 Epoxy Zinc Phosphate 70
- Hi-Pon 20-10 Epoxy Zinc Phosphate 63

Intermediate

- Hi-Pon 20-04 STE 80
- Hi-Pon 20-04 STE AL 80
- Hi-Pon 20-04 STE GF 80
- Hi-Pon 20-04 STE MIO 80
- Hi-Pon 30-01 Epoxy Midcoat 70
- Hi-Pon 30-02 Epoxy MIO 80
- Hi-Pon 30-03 Epoxy Midcoat 80
- Hi-Pon 30-04 Epoxy MIO 70

For the choice of coating system for different application, refer to the product brochure or contact Nippon Paint for professional recommendation.

PACKAGING

| Unit | Base | | Hardener | |
|------|------|----------------|----------|----------------|
| | Vol | Container Size | Vol | Container Size |
| 5L | 4L | 5L | 1L | 1L |
| 20L | 16L | 20L | 4L | 5L |

STORAGE

Shelf life : Part A: 12 months (25°C)
Part B: 12 months (25°C)

Subject to re-inspection thereafter. Higher temperature during storage may reduce the shelf life and may lead to gelling in the tin.

Store in tightly closed container in a dry, cool and well ventilated space, keep away from sources of heat and ignition.



HI-PON 50-01 POLYURETHANE TOP COAT

TECHNICAL DATA SHEET

SAFETY PRECAUTION

- This product is intended for use of professional applicators. Refer to the safety information display on the container and in the safety data sheet (SDS) before using the product.
- Use this product in well-ventilated area, avoid skin contact, spillage on the skin should immediately be removed with suitable cleanser, soap and water.
- Eye should be well flush with water and seek for medical attention immediately upon contact with this product.
- During the application, naked flame, welding operation and smoking is not allowed. Adequate ventilation should be provided.
- If you have any doubt regarding the suitability of use, refer to Nippon Paint for further advice.

DISCLAIMER

The information in this data sheet is given to the best of Nippon Paint's knowledge and practical experience. Users may consult with Nippon Paint on the general suitability of the product for their needs and specific application practices though it remains each user's responsibility to determine the suitability of the product for the user's particular use. The condition of the substrate and application are not within Nippon Paint's control. Therefore no implied conditions, warranties or other terms will apply to the Product. Nippon Paint does not and cannot warrant the results which the user may obtain by using the product. In no event will Nippon Paint be liable to the user for any kind of loss (whether direct or indirect) even if Nippon Paint was previously advised of it. In line with Nippon Paint's policy for continuous development, Nippon Paint reserves the right to modify the product and the information in this data sheet without prior notice. It is the user's responsibility to check with Nippon Paint for the latest version of this data sheet. This data sheet has been translated into various languages. In the event of any inconsistency, the English version shall prevail.