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|  | SUBHOLDING REFINING & PETROCHEMICAL | Doc. No. : RP-ETS-PIP-GS-0004-00-2021 |
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| GENERAL SPECIFICATION | | |

COLOR CODING OF PIPING COMPONENTS

ENGINEERING TECHNICAL STANDARDS & PROCEDURES PT KILANG PERTAMINA INTERNASIONAL DIREKTORAT PROYEK INFRASTRUKTUR

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1. INTRODUCTION

1.1 To define color coding requirements for piping materials.

2. SCOPE

2.1 Color coding is an aid to fabricators and warehouse personnel in the recognition of piping materials by general material classifications.

The presence of a color code does not diminish the need for permanent markings to be transferred whenever a component is cut during fabrication.

Stock code numbers and other permanent markings must always be checked before any component is released for fabrication or installation.

In-line components, such as strainers, sight flow indicators, speciality items, etc., shall not be color coded.

Piping components supplied as fabricated spools or in package units or other subassemblies shall not be color coded.

This specification does not address color coding for purposes of area laydown identification or service definition.

3. CONFLICTS AND DEVIATIONS

3.1 Any conflicts between this standard and other applicable Engineering Technical Standards & Procedures (ETSP), or OWNER standard, codes, and forms shall be resolved in writing by OWNER.

3.2 All direct requests to deviate from this standard (ETSP) in writing to OWNER,

1. PENGANTAR

1.1 Untuk menentukan persyaratan pengkodean warna untuk *material* perpipaan.

2. LINGKUP

2.1 Pengkodean warna merupakan bantuan untuk perakit dan personil gudang dalam mengenali *material* perpipaan dengan klasifikasi *material* umum.

Kehadiran kode warna tidak mengurangi kebutuhan akan penandaan permanen untuk ditransfer/ dipindahkan setiap kali komponen dipotong selama fabrikasi.

Nomor kode stok dan tanda permanen lainnya harus selalu diperiksa sebelum setiap komponen dilepaskan untuk fabrikasi atau instalasi.

Komponen *in-line*, seperti *strainer*, *sight flow indicator*, *item* khusus, dll., tidak boleh diberi kode warna.


Komponen pipa yang dipasok sebagai fabrikasi *spool* atau dalam *unit* paket atau *sub-rakitan* lainnya tidak boleh diberi kode warna.

Spesifikasi ini tidak membahas kode warna untuk tujuan identifikasi *laydown area* atau definisi *service*.

3. KONFLIK DAN DEVIASI

3.1 Apabila terdapat konflik antara standar ini dengan *Engineering Technical Standards & Procedures* (ETSP) yang berlaku lainnya, atau standar PEMILIK, *codes* dan formulir, maka harus diselesaikan secara tertulis oleh PEMILIK.

3.2 Semua permintaan penggunaan standar yang berbeda dari standar ini (ETSP), harus

| | | |
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who shall follow internal OWNER procedure and forward such requests to OWNER for approval.

diajukan kepada PEMILIK secara tertulis dengan mengikuti prosedur internal PEMILIK untuk mendapatkan persetujuan.

4. DEFINITIONS

4.1 The following words shall have these special meanings when used herein:

| | |
|-----------------------------------|-----------------------------------------------------------------------------------------------------|
| OWNER | Owner of the Plant is defined as PT Kilang Pertamina Internasional. |
| CONTRACTOR/ CONSULTANT | Defined as The Organization to which PT Kilang Pertamina Internasional assign the work. |
| shall | Indicates that the statement is mandatory |
| should | Indicates a recommendation |
| VENDOR | Defined as the company selected to supply the equipment and service detailed in this specification. |

4. DEFINISI

4.1 Penggunaan kata-kata berikut harus memiliki arti khusus sebagai berikut:

| | |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| PEMILIK | Pemilik Kilang didefinisikan sebagai PT Kilang Pertamina Internasional. |
| KONTRAKTOR/ KONSULTAN | Didefinisikan sebagai Organisasi yang ditunjuk oleh di PT Kilang Pertamina Internasional untuk melakukan suatu pekerjaan. |
| shall | Menunjukkan bahwa pernyataan itu wajib |
| should | Menunjukkan rekomendasi |
| VENDOR | Didefinisikan sebagai perusahaan yang dipilih untuk memasok peralatan dan servis yang dirinci dalam spesifikasi ini. |

5. CODES AND STANDARDS

The following Codes, Standard and Specifications apply to this specification. When an edition date is not indicated for a code or standard or any update in codes and standards in this specification document, the latest edition and addendum in force at the time of purchase

5. KODE DAN STANDAR

Kode, standar, dan spesifikasi berikut berlaku untuk spesifikasi ini. Kode dan standar harus menggunakan edisi yang terbaru atau edisi yang berlaku pada saat pembelian. *Material &* peralatan harus sesuai spesifikasi atau setara dengan yang disetujui

shall apply. Material & equipment shall be as a specification or an equal approved by OWNER.

oleh PEMILIK.

5.1 PIPE FABRICATION INSTITUTE

PFI-ES-22 Recommended Practice for Color Coding of Piping Materials (Dec 2016 edition).

5.1 *PIPE FABRICATION INSTITUTE*

PFI-ES-22 *Recommended Practice for Color Coding of Piping Materials (Dec 2016 edition).*

6. SUBSTITUTIONS

6.1 When a substitution of a material of manufacture (e.g., ASTM A333 Gr. 6 pipe in lieu of ASTM A106 Gr. B) has been approved by Buyer, the color coding of the substitute material shall be that specified for the original material.

6. SUBSTITUSI

6.1 Ketika substitusi dari *material* manufaktur/pembuatan (misalnya, pipa ASTM A333 Gr. 6 sebagai pengganti ASTM A106 Gr. B) telah disetujui oleh Pembeli, kode warna *material* pengganti harus sesuai dengan *material* asli.

7. MATERIAL TYPES NOT INCLUDED

7.1 Supplier shall request a suitable color code for any material of manufacture within their scope of supply that is not listed in this specification.

7. JENIS *MATERIAL* YANG TIDAK TERMASUK

7.1 Pemasok harus meminta kode warna yang sesuai untuk setiap *material* manufaktur/pembuatan dalam lingkup pasokan mereka yang tidak tercantum dalam spesifikasi ini.

8. MARKING MATERIALS AND TECHNIQUES

8.1 The paint used for color coding shall be specifically made for this purpose. Color coding materials shall be durable and have distinctive colors such as OSHA Safety colors. Color coding materials shall be compatible with paint primer and topcoat. For materials other than carbon steel, low temperature carbon steel, high yield strength carbon steel, and other ferritic material, the paint shall be

8. PENANDAAN *MATERIAL* DAN TEKNIK

8.1 Cat yang digunakan untuk pengkodean warna harus dibuat khusus untuk tujuan ini. *Material* kode warna harus tahan lama dan memiliki warna khas seperti warna pada OSHA *Safety*. *Material* kode warna harus sesuai dengan cat *primer* dan *topcoat*. Untuk *material* selain *carbon steel*, *low temperature carbon steel*, *high yield strength carbon steel*, dan *material* feritik lainnya, cat harus sepenuhnya bebas dari pigmen logam atau

completely free of metallic pigments or other metallic ingredients. However, where the lighter colors specified cannot be easily obtained without metallic pigments, color coding paint containing titanium dioxide or rutile titanium dioxide will be considered. No other metallic ingredient will be considered. Supplier shall submit proposed paint material for approval.

In addition, for austenitic and duplex stainless steels and nickel based alloys, the paint shall be completely free of any ingredient containing sulphur and halogen compounds. Supplier shall submit proposed paint material for approval.

Suppliers shall include, in their quotation, a specific statement to the effect that they understand and will comply with this requirement. Once an order has been placed, the Supplier is to submit, as a vendor drawing, a datasheet or descriptive leaflet from the paint manufacturer stating the specific constituents and chemical composition of the proposed color coding paint.

Surfaces to be color coded shall be clean, dry, and free from oil, grease, rust, scale, and other foreign matter.

If any surface preparation is required, the color code paint is to be applied within the same work shift. Prepared surfaces that must be left for a longer period shall be recleaned before painting.

Color coding paint shall not be applied to any machined surface, or on any surface intended for welding.

bahan logam lainnya. Namun, apabila warna yang lebih terang seperti yang ditentukan tidak dapat diperoleh dengan mudah tanpa pigmen logam, kode warna cat yang mengandung *titanium* dioksida atau *titanium* dioksida *rutile* akan dipertimbangkan. Tidak ada bahan logam lain yang akan dipertimbangkan. Pemasok harus menyerahkan *material* cat yang diusulkan untuk disetujui.

Selain itu, untuk *stainless steels* austenitik dan dupleks serta paduan berbasis nikel, cat harus sepenuhnya bebas dari unsur apapun yang mengandung senyawa sulfur dan *halogen*. Pemasok harus menyerahkan *material* cat yang diusulkan untuk disetujui.

Pemasok harus menyertakan, dalam penawaran mereka, pernyataan khusus yang menyatakan bahwa mereka memahami dan akan mematuhi persyaratan ini. Setelah pesanan dilakukan, Pemasok harus menyerahkan, seperti gambar *vendor*, *datasheet* atau *descriptive leaflet* (deskripsi selebaran) dari pembuat cat yang menyatakan konstituen spesifik dan komposisi kimia dari kode warna cat yang diusulkan.

Permukaan yang akan diberi kode warna harus bersih, kering, dan bebas dari minyak, pelumas, karat, *scale* (kerak), dan benda asing lainnya.

Jika persiapan permukaan diperlukan, kode warna cat harus diterapkan dalam *shift* kerja yang sama. Permukaan yang telah disiapkan yang harus dibiarkan untuk waktu yang lebih lama harus dibersihkan kembali sebelum dicat.

Kode warna cat tidak boleh diterapkan pada setiap permukaan yang telah melalui proses pemesinan, atau pada permukaan apa pun

The paint manufacturer's instructions for surface preparation and application shall be followed. Paint shall not be applied under the following conditions:

- Outdoors during fog, rain, snow, or high wind conditions in a dusty atmosphere (sand storms, ghiblis, mistrals, etc.);
- When ambient temperature is less than 40 degrees F (5 degrees C);
- When the relative humidity is greater than 85%;
- When the metal surface temperature is less than 5 degrees F (3 degrees C) above the ambient dewpoint.

As a minimum one coat of paint shall be applied to achieve a dry film thickness as recommended by the paint manufacturer.

Painted areas shall be thoroughly cured before the components are handled and prepared for packaging and shipping.

9. MARKING REQUIREMENTS

- 9.1 Each length of pipe or tubing shall be marked with a continuous stripe not less than 1 inch (25 mm) wide or one-half the nominal diameter, whichever is smaller. If two stripes are required, each stripe shall be not less than 1 inch (25 mm) wide or one-half the nominal diameter, whichever is smaller. Stripes should stop 2 inches (50 mm) from the end or weld bevel.

On valves, fittings, and flanges, the location of the markings shall be in accordance with the recommendations

yang dimaksudkan untuk pengelasan.

Instruksi pembuat cat untuk persiapan dan aplikasi permukaan harus diikuti. Cat tidak boleh digunakan dalam kondisi berikut:

- Di luar ruangan selama kondisi kabut, hujan, salju, atau angin kencang dalam suasana atmosfer berdebu (badai pasir, *ghiblis*, *mistral*, dll.);
- Ketika suhu sekitar (*ambient*) kurang dari 40 derajat F (5 derajat C);
- Ketika kelembaban relatif lebih besar dari 85%;
- Ketika suhu permukaan logam kurang dari 5 derajat F (3 derajat C) di atas *ambient dewpoint*.

Minimal satu lapisan cat harus digunakan untuk mencapai ketebalan *dry film* seperti yang direkomendasikan oleh pembuat cat.

Area yang dicat harus dirawat secara menyeluruh sebelum komponen ditangani dan disiapkan untuk pengemasan dan pengiriman.

9. MENANDAI PERSYARATAN

- 9.1 Setiap panjang pipa atau *tubing* harus ditandai dengan garis yang berkesinambungan dengan lebar tidak kurang dari 1 inci (25 mm) atau setengah dari *diameter nominal*, mana yang lebih kecil. Jika diperlukan dua strip, setiap strip harus memiliki lebar tidak kurang dari 1 inci (25 mm) atau setengah dari *diameter nominal*, mana yang lebih kecil. Strip harus berhenti 2 inci (50 mm) dari ujung atau *bevel* las.

Pada *valve*, *fitting*, dan *flange*, lokasi penandaan harus sesuai dengan rekomendasi yang terkandung dalam PFI-

contained in PFI-ES-22

Glass, plastic, fiberglass reinforced plastic, and galvanised piping components shall not be color coded.

On spiral-wound gaskets, the location of the markings shall be in accordance with ASME B16.20, Metallic Gaskets for Pipe Flanges – Ring-Joint, Spiral Wound and Jacketed.

ES-22.

Kaca, plastik, plastik yang diperkuat *fiberglass*, dan komponen pipa *galvanis* tidak boleh diberi kode warna.

Pada *gasket spiral-wound*, lokasi penandaan harus sesuai dengan ASME B16.20, *Metallic Gaskets for Pipe Flanges – Ring-Joint, Spiral Wound, and Jacketed*.

10. COLOR CODES

10. KODE WARNA

COLOR CODING CHART FOR PIPING MATERIAL IDENTIFICATION

BAGAN KODE WARNA UNTUK IDENTIFIKASI MATERIAL PIPA

| Material | Common Designation | UNS Designation | Color of Stripe(s) (See Note below) |
|---------------------------------------------------------|-------------------------------------------------|-----------------|-----------------------------------------|
| <i>Material</i> | Sebutan Umum | Sebutan UNS | Warna Strip(s) (Lihat Catatan di bawah) |
| Pipe Carbon Steel | | | |
| Pipa Carbon Steel | | | |
| Carbon Steel, Seamless (Triple stamped) | ASTM A53 Gr. B / API 5L Gr. B / ASTM A106 Gr. B | None | None |
| <i>Carbon Steel</i> , Tanpa kampuh (Tiga kali stempel) | ASTM A53 Gr. B / API 5L Gr. B / ASTM A106 Gr. B | Tidak ada | Tidak ada |
| Carbon Steel, Smls, Sy < 70 ksi | ASTM A53 Gr. B | K03005 | 1-Yellow |
| <i>Carbon Steel</i> , Smls, Sy < 70 ksi | ASTM A53 Gr. B | K03005 | 1-Kuning |
| Carbon Steel, Smls killed | ASTM A106 Gr. B | K03006 | None |

| Material <i>Material</i> | Common Designation Sebutan Umum | UNS Designation Sebutan UNS | Color of Stripe(s) (See Note below) Warna Strip(s) (Lihat Catatan di bawah) |
|-------------------------------------------------------------|----------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------|
| <i>Carbon Steel, Smls killed</i> | ASTM A106 Gr. B | K03006 | Tidak ada |
| Carbon Steel, Smls <i>Carbon Steel, Smls</i> | API 5L Gr. B API 5L Gr. B | None Tidak ada | None Tidak ada |
| Carbon Steel, 100% X-Ray <i>Carbon Steel, 100% X-Ray</i> | ASTM A671 CC60 Cl 12 ASTM A671 CC60 Cl 12 | None Tidak ada | None Tidak ada |
| Carbon Steel, 100% X-Ray <i>Carbon Steel, 100% X-Ray</i> | ASTM A672 C60 Cl 12 ASTM A672 C60 Cl 12 | None Tidak ada | 1-Red 1-Merah |
| Carbon Steel, Sy ≥ 70ksi <i>Carbon Steel, Sy ≥ 70ksi</i> | ASTM A106 Gr. C ASTM A106 Gr. C | K03501 K03501 | 1-Light Green 1-Hijau Muda |
| Carbon Steel Galvanised <i>Carbon Steel Galvanis</i> | ASTM A53 Type F ASTM A53 Tipe F | None Tidak ada | None Tidak ada |
| Carbon Steel, Smls <i>Carbon Steel, Smls</i> | ASME SA53 Gr. B ASME SA53 Gr. B | None Tidak ada | 1-Aluminium 1-Aluminium |
| Carbon Steel, Smls <i>Carbon Steel, Smls</i> | ASME SA 106 Gr. B ASME SA 106 Gr. B | None Tidak ada | 2-Aluminium 2-Aluminium |
| Carbon Steel, ERW <i>Carbon Steel, ERW</i> | ASTM A53 Gr. B / API 5L Gr. B ASTM A53 Gr. B / API 5L Gr. B | None Tidak ada | 1-Yellow, 1-Light Green 1-Kuning, 1-Hijau Muda |
| Carbon Steel, SAW <i>Carbon Steel, SAW</i> | API 5L Gr. B API 5L Gr. B | None Tidak ada | 1-White, 1-Yellow 1-Putih, 1-Kuning |



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| Material | Common Designation | UNS Designation | Color of Stripe(s) (See Note below) |
|---------------------------------------------------------------|---------------------------|-----------------|-----------------------------------------|
| <i>Material</i> | Sebutan Umum | Sebutan UNS | Warna Strip(s) (Lihat Catatan di bawah) |
| Pipe Carbon Steel Low Temp | | | |
| Pipa Carbon Steel Bersuhu Rendah | | | |
| | | | |
| Carbon Steel, low temp (impact tested) | ASTM A333 Gr. 6 | K03006 | 1-Blue |
| <i>Carbon Steel</i> , bersuhu rendah (<i>impact tested</i>) | ASTM A333 Gr. 6 | K03006 | 1-Biru |
| Carbon Steel, low temp (impact tested) | ASTM A671 CC60 (S2) CI 22 | None | 2-Blue |
| <i>Carbon Steel</i> , bersuhu rendah (<i>impact tested</i>) | ASTM A671 CC60 (S2) CI 22 | Tidak ada | 2-Biru |
| | | | |
| Pipe High Yield Carbon Steel | | | |
| Pipa Carbon Steel Berdaya Ulur Tinggi | | | |
| | | | |
| 52,000 min yield | API 5LX-52 | None | 1-Orange, 1-Light Green |
| <i>Minimum</i> ulur 52,000 | API 5LX-52 | Tidak ada | 1-Oranye, 1-Hijau Muda |
| 60,000 min yield | API 5LX-60 | None | 1-Orange, 1-Solid Pink |
| <i>Minimum</i> ulur 60,000 | API 5LX-60 | Tidak ada | 1-Oranye, 1-Pink Pekat |
| 65,000 min yield | API 5LX-65 | None | 2-Orange |
| <i>Minimum</i> ulur 65,000 | API 5LX-65 | Tidak ada | 2-Oranye |
| 70,000 min yield | API 5LX-70 | None | 1-Orange, 1-Yellow |
| <i>Minimum</i> ulur 70,000 | API 5LX-70 | Tidak ada | 1-Oranye, 1-Kuning |
| | | | |
| Pipe Low Alloy Materials | | | |
| Pipa Low Alloy Materials (Material Pipa Paduan Rendah) | | | |
| C-Mo Steel | ASTM A333 Gr. P1 | K11522 | 1-Orange |
| Baja C-Mo | ASTM A333 Gr. P1 | K11522 | 1-Oranye |

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| Material <i>Material</i> | Common Designation Sebutan Umum | UNS Designation Sebutan UNS | Color of Stripe(s) (See Note below) Warna Strip(s) (Lihat Catatan di bawah) |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------|
| 1 Cr-1/2 Mo Steel Baja 1 Cr-1/2 Mo | ASTM A333 Gr. P12 ASTM A333 Gr. P12 | K11562 K11562 | 1-Orange, 1-Blue 1-Oranye, 1-Biru |
| 1-1/4 Cr-1/2 Mo Steel Baja 1-1/4 Cr-1/2 Mo | ASTM A335 Gr. P11 / ASTM A691 Gr. 1-1/4 Cr. CI 12 100% X-Ray ASTM A335 Gr. P11 / ASTM A691 Gr. 1-1/4 Cr. CI 12 100% X-Ray | K11597 K11597 | 1-Brown 1-Coklat |
| 2-1/4 Cr-1 Mo Steel Baja 2-1/4 Cr-1 Mo | ASTM A335 Gr. P22 / ASTM A691 Gr. 2-1/4 Cr. CI 12 100% X-Ray ASTM A335 Gr. P22 / ASTM A691 Gr. 2-1/4 Cr. CI 12 100% X-Ray | K21590 K21590 | 1-White 1-Putih |
| 5 Cr-1/2 Mo Steel Baja 5 Cr-1/2 Mo | ASTM A335 Gr. P5 / ASTM A691 Gr. 5 Cr. CI 12 100% X-Ray ASTM A335 Gr. P5 / ASTM A691 Gr. 5 Cr. CI 12 100% X-Ray | K41545 K41545 | 1-Light Grey 1-Abu Muda |
| 9 Cr-1 Mo Steel Baja 9 Cr-1 Mo | ASTM A335 Gr. P9 / ASTM A691 Gr. 9 Cr. CI 12 100% X-Ray ASTM A335 Gr. P9 / ASTM A691 Gr. 9 Cr. CI 12 100% X-Ray | S50400 S50400 | 1-Pink 1-Merah Muda |
| Pipe Austenitic Stainless Steels Pipa Stainless Steels Austenitik | | | |



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|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------|
| Type 304/304L Smls or 100% X-Ray (Dual Certified) Tipe 304/304L Smls atau 100% X-Ray (Bersertifikat Ganda) | ASTM A312 TP304/TP304L ASTM A312 TP304/TP304L | | None Tidak ada |
| Type 304H Smls or 100% X-Ray Tipe 304H Smls atau 100% X-Ray | ASTM A312 TP304H ASTM A312 TP304H | S30409 S30409 | 1-Black 1-Hitam |
| Type 309S 100% X-Ray Tipe 309S 100% X-Ray | ASTM A358 Gr. 309S ASTM A358 Gr. 309S | S30908 S30908 | 2-Black 2-Hitam |
| Type 310S 100% X-Ray Tipe 310S 100% X-Ray | ASTM A358 Gr. 310S ASTM A358 Gr. 310S | S31008 S31008 | 1-Brown, 1-Orange 1-Coklat, 1-Oranye |
| Type 316/316L Smls or 100% X-Ray (Dual Certified) Tipe 316/316L Smls atau 100% X-Ray (Bersertifikat Ganda) | ASTM A312 TP316/TP316L ASTM A312 TP316/TP316L | | 1-Beige 1-Krem |
| Type 316H Smls or 100% X-Ray Tipe 316H Smls atau 100% X-Ray | ASTM A312 TP316H ASTM A312 TP316H | S31609 S31609 | 1-Beige, 1-Light Green 1-Krem, 1-Hijau Muda |
| Type 317/317L Smls or 100% X-Ray (Dual Certified) | ASTM A312 TP317/317L | | 2-Brown |

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| Material <i>Material</i> | Common Designation Sebutan Umum | UNS Designation Sebutan UNS | Color of Stripe(s) (See Note below) Warna Strip(s) (Lihat Catatan di bawah) |
|----------------------------------------------------------|----------------------------------------|------------------------------------|------------------------------------------------------------------------------------|
| Type 317/317L Smls atau 100% X-Ray (Bersertifikat Ganda) | ASTM A312 TP317/317L | | 2-Coklat |
| Type 321 Smls or 100% X-Ray | ASTM A312 TP321 | S32100 | 1-Purple |
| Type 321 Smls atau 100% X-Ray | ASTM A312 TP321 | S32100 | 1-Ungu |
| Type 321H Smls or 100% X-Ray | ASTM A312 TP321H | S32109 | 2-Purple |
| Type 321H Smls atau 100% X-Ray | ASTM A312 TP321H | S32109 | 2-Ungu |
| Type 347 Smls or 100% X-Ray | ASTM A312 TP347 | S34700 | 1-Dark Green |
| Type 347 Smls atau 100% X-Ray | ASTM A312 TP347 | S34700 | 1-Hijau Tua |
| Type 347H Smls or 100% X-Ray | ASTM A312 TP347H | S34709 | 2-Dark Green |
| Type 347H Smls atau 100% X-Ray | ASTM A312 TP347H | S34709 | 2-Hijau Tua |
| Pipe Nickel Based Alloys | | | |
| Pipa Nikel Berdasarkan Paduan | | | |
| | | | |
| Nickel 200 | ASTM B161 | N02200 | 1-Black, 1-Pink |
| Nikel 200 | ASTM B161 | N02200 | 1-Hitam, 1-Merah Muda |
| Incoloy 800 | ASTM B407 | N08800 | 1-Black, 1-Orange |
| <i>Incoloy 800</i> | ASTM B407 | N08800 | 1-Hitam, 1-Oranye |
| Incoloy 800H | ASTM B407 | N08810 | 1-Black, 1-Red |
| <i>Incoloy 800H</i> | ASTM B407 | N08810 | 1-Hitam, 1-Merah |

| Material <i>Material</i> | Common Designation Sebutan Umum | UNS Designation Sebutan UNS | Color of Stripe(s) (See Note below) Warna Strip(s) (Lihat Catatan di bawah) |
|--------------------------------------------------------|-----------------------------------------|------------------------------------|------------------------------------------------------------------------------------|
| Incoloy 825 <i>Incoloy 825</i> | ASTM B423 <i>ASTM B423</i> | N08825 <i>N08825</i> | 1-Black, 1-Blue <i>1-Hitam, 1-Biru</i> |
| Inconel 600 <i>Inconel 600</i> | ASTM B167 <i>ASTM B167</i> | N06600 <i>N06600</i> | 1-Blue, 1-Light Green <i>1-Biru, 1-Hijau Muda</i> |
| Inconel 625 <i>Inconel 625</i> | ASTM B444 <i>ASTM B444</i> | N06625 <i>N06625</i> | 1- Blue, 1-Pink <i>1- Biru, 1-Merah Muda</i> |
| Hastelloy Alloy B-2 <i>Hastelloy Paduan B-2</i> | ASTM B622 <i>ASTM B622</i> | N10665 <i>N10665</i> | 1-Red, 1-Orange <i>1-Merah, 1-Oranye</i> |
| Hastelloy Alloy C-276 <i>Hastelloy Paduan C-276</i> | ASTM B622 <i>ASTM B622</i> | N10276 <i>N10276</i> | 1-Red, 1-Blue <i>1-Merah, 1-Biru</i> |
| Hastelloy Alloy C-22 <i>Hastelloy Paduan C-22</i> | ASTM B622 <i>ASTM B622</i> | N06022 <i>N06022</i> | 2-Red <i>2-Merah</i> |
| Alloy 20 <i>Paduan 20</i> | ASTM B464/B729 <i>ASTM B464/B729</i> | N08020 <i>N08020</i> | 1-Tan <i>1-Tan</i> |
| Monel 400 <i>Monel 400</i> | ASTM B165 <i>ASTM B165</i> | N04400 <i>N04400</i> | 1-Black, 1-Yellow <i>1-Hitam, 1-Kuning</i> |
| Pipe Aluminium Alloys | | | |
| Paduan Pipa Aluminium | | | |
| Alloy 3003 Aluminium <i>Paduan Aluminium 3003</i> | ASTM B241 <i>ASTM B241</i> | A93003 <i>A93003</i> | None <i>Tidak ada</i> |
| Alloy 6061 Aluminium <i>Paduan Aluminium 6061</i> | ASTM B241 <i>ASTM B241</i> | A96061 <i>A96061</i> | 1-Black, 1-Dark Green <i>1-Hitam, 1-Hijau Tua</i> |



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| Material | Color Code Kode Warna | | | |
|---------------------------------------|--------------------------|-----------------------|------------------|-------------------------|
| | Valves | THD/SW Fittings | Flanges | Buttweld Fittings |
| | <i>Valve</i> | <i>THD/SW Fitting</i> | <i>Flange</i> | <i>Buttweld Fitting</i> |
| Carbon Steel | | | | |
| ASTM A105 | None | None | None | N/A |
| ASTM A105 | Tidak ada | Tidak ada | Tidak ada | N/A |
| ASTM A216 Gr. WCB | None | N/A | N/A | N/A |
| ASTM A216 Gr. WCB | Tidak ada | N/A | N/A | N/A |
| ASTM A234 Gr. WPB | N/A | N/A | N/A | None |
| ASTM A234 Gr. WPB | N/A | N/A | N/A | Tidak ada |
| | | | | |
| ASTM A181 Gr. 181 | N/A | Yellow | Yellow | N/A |
| ASTM A181 Gr. 181 | N/A | Kuning | Kuning | N/A |
| | | | | |
| ASME SA105 | Aluminium | Aluminium | Aluminium | N/A |
| ASME SA105 | <i>Aluminium</i> | <i>Aluminium</i> | <i>Aluminium</i> | N/A |
| ASTM SA216 Gr. WCB | Aluminium | N/A | N/A | N/A |
| ASTM SA216 Gr. WCB | <i>Aluminium</i> | N/A | N/A | N/A |
| ASME SA234 Gr. WPB | N/A | N/A | N/A | Aluminium |
| ASME SA234 Gr. WPB | N/A | N/A | N/A | <i>Aluminium</i> |
| | | | | |
| Carbon Steel – Low Temp. | | | | |
| Carbon Steel – Bersuhu Rendah. | | | | |
| | | | | |
| ASTM A350 Gr. LF2 | Blue | Blue | Blue | N/A |
| ASTM A350 Gr. LF2 | Biru | Biru | Biru | N/A |

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| Material | Color Code Kode Warna | | | |
|---------------------------------------------------------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
| | Valves | THD/SW Fittings | Flanges | Buttweld Fittings |
| | <i>Valve</i> | <i>THD/SW Fitting</i> | <i>Flange</i> | <i>Buttweld Fitting</i> |
| ASTM A352 Gr. LCB | Blue | N/A | N/A | N/A |
| ASTM A352 Gr. LCB | Biru | N/A | N/A | N/A |
| ASTM A420 Gr. WPL6 | N/A | N/A | N/A | Blue |
| ASTM A420 Gr. WPL6 | N/A | N/A | N/A | Biru |
| | | | | |
| Carbon Steel High Yield Carbon Steel Berdaya Ulur Tinggi | | | | |
| | | | | |
| ASTM A694 Gr. F52 | 1-Orange, 1-Light Green | 1-Orange, 1-Light Green | 1-Orange, 1-Light Green | N/A |
| ASTM A694 Gr. F52 | 1-Oranye, 1-Hijau Muda | 1-Oranye, 1-Hijau Muda | 1-Oranye, 1-Hijau Muda | N/A |
| ASTM A860 WPHY52 | N/A | N/A | N/A | 1-Orange, 1-Light Green |
| ASTM A860 WPHY52 | N/A | N/A | N/A | 1-Oranye, 1-Hijau Muda |
| | | | | |
| ASTM A694 Gr. F60 | 1-Orange, 1-Solid Pink | 1-Orange, 1-Solid Pink | 1-Orange, 1-Solid Pink | N/A |
| ASTM A694 Gr. F60 | 1-Oranye, 1-Pink Pekat | 1-Oranye, 1-Pink Pekat | 1-Oranye, 1-Pink Pekat | N/A |
| ASTM A860 WPHY60 | N/A | N/A | N/A | 1-Orange, 1-Solid Pink |
| ASTM A860 WPHY60 | N/A | N/A | N/A | 1-Oranye, 1-Pink Pekat |
| | | | | |
| ASTM A694 Gr. F65 | 2-Orange | 2-Orange | 2-Orange | N/A |



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|---------------------------------|--------------------------|------------------------|------------------------|-------------------------|
| | Valves | THD/SW Fittings | Flanges | Buttweld Fittings |
| | <i>Valve</i> | <i>THD/SW Fitting</i> | <i>Flange</i> | <i>Buttweld Fitting</i> |
| ASTM A694 Gr. F65 | 2-Oranye | 2-Oranye | 2-Oranye | N/A |
| ASTM A860 WPHY65 | N/A | N/A | N/A | 2-Orange |
| ASTM A860 WPHY65 | N/A | N/A | N/A | 2-Oranye |
| ASTM A694 Gr. F70 | 1-Orange, 1- Yellow | 1-Orange, 1- Yellow | 1-Orange, 1- Yellow | N/A |
| ASTM A694 Gr. F70 | 1-Oranye, 1- Kuning | 1-Oranye, 1- Kuning | 1-Oranye, 1- Kuning | N/A |
| ASTM A860 WPHY70 | N/A | N/A | N/A | 1-Orange, 1- Yellow |
| ASTM A860 WPHY70 | N/A | N/A | N/A | 1-Oranye, 1- Kuning |
| Low Chrome Alloy | | | | |
| Paduan Chrome Rendah | | | | |
| <u>1-1/4 Cr – 1/2 Mo</u> | | | | |
| ASTM A182 Gr. F11 | Brown | Brown | Brown | N/A |
| ASTM A182 Gr. F11 | Coklat | Coklat | Coklat | N/A |
| ASTM A234 Gr. WP11 | N/A | N/A | N/A | Brown |
| ASTM A234 Gr. WP11 | N/A | N/A | N/A | Coklat |
| ASTM A671 Gr. WC6 | Brown | N/A | N/A | N/A |
| ASTM A671 Gr. WC6 | Coklat | N/A | N/A | N/A |
| <u>2-1/4 Cr – 1 Mo</u> | | | | |
| ASTM A182 Gr. F22 | White | White | White | N/A |
| ASTM A182 Gr. F22 | Putih | Putih | Putih | N/A |

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| Material | Color Code Kode Warna | | | |
|-----------------------------|--------------------------|-----------------------|---------------|-------------------------|
| | Valves | THD/SW Fittings | Flanges | Buttweld Fittings |
| | <i>Valve</i> | <i>THD/SW Fitting</i> | <i>Flange</i> | <i>Buttweld Fitting</i> |
| ASTM A234 Gr. WP22 | N/A | N/A | N/A | White |
| ASTM A234 Gr. WP22 | N/A | N/A | N/A | Putih |
| ASTM A671 Gr. WC9 | White | N/A | N/A | N/A |
| ASTM A671 Gr. WC9 | Putih | N/A | N/A | N/A |
| <u>5 Cr – 1/2 Mo</u> | | | | |
| ASTM A182 Gr. F5 | Light Grey | Light Grey | Light Grey | N/A |
| ASTM A182 Gr. F5 | Abu Muda | Abu Muda | Abu Muda | N/A |
| ASTM A234 Gr. WP5 | N/A | N/A | N/A | Light Grey |
| ASTM A234 Gr. WP5 | N/A | N/A | N/A | Abu Muda |
| ASTM A671 Gr. C5 | Light Grey | N/A | N/A | N/A |
| ASTM A671 Gr. C5 | Abu Muda | N/A | N/A | N/A |
| <u>9 Cr-1 Mo</u> | | | | |
| ASTM A182 Gr. F9 | Pink | Pink | Pink | N/A |
| ASTM A182 Gr. F9 | Merah Muda | Merah Muda | Merah Muda | N/A |
| ASTM A234 Gr. WP9 | N/A | N/A | N/A | Pink |
| ASTM A234 Gr. WP9 | N/A | N/A | N/A | Merah Muda |
| ASTM A671 Gr. C12 | Pink | N/A | N/A | N/A |
| ASTM A671 Gr. C12 | Merah Muda | N/A | N/A | N/A |
| <u>Alloy 20</u> | | | | |
| <u>Paduan 20</u> | | | | |
| ASTM B462 UNS N08020 | Tan | Tan | Tan | N/A |

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| Material | Color Code Kode Warna | | | |
|-------------------------|--------------------------|-----------------------|---------------|-------------------------|
| | Valves | THD/SW Fittings | Flanges | Buttweld Fittings |
| | <i>Valve</i> | <i>THD/SW Fitting</i> | <i>Flange</i> | <i>Buttweld Fitting</i> |
| ASTM B462 UNS N08020 | <i>Tan</i> | <i>Tan</i> | <i>Tan</i> | N/A |
| ASTM B366 UNS N08020 | N/A | N/A | N/A | Tan |
| ASTM B366 UNS N08020 | N/A | N/A | N/A | <i>Tan</i> |
| ASTM A351 CN7M | Tan | N/A | N/A | N/A |
| ASTM A351 CN7M | <i>Tan</i> | N/A | N/A | N/A |

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