

油漆施工工艺

1. Surface Preparation:

表面处理

Surface preparation is one of the key factors that determine the service life of the coatings. The purpose is not only to obtain a clean surface by removing potential corrosive hazards, but also to increase the roughness of the surfaces, in order to increase the bonding between the coatings and the steel substrate.

表面处理是决定涂层服务时间的主要因素之一，目的是获得一个清洁的表面，去除潜在的腐蚀隐患，同时增加表面粗糙度，增加钢板表面与涂层间附着力。

➤ The procedure of the surface preparation:

Before mechanical surface preparation is carried out the areas shall be cleaned for any salts and other contamination based on the working specification.

使用动力打磨工具或者其他手动处理工具进行表面处理，并且在表面处理前需要按协议规范去除盐分和其他污染物。

Steps:

步骤如下：

- a. Oil, grease, foreigner residue etc. to be removed by emulsion cleaning
使用乳化剂清洗油脂和其他外来的残留物。
- b. Fresh water cleaning to remove water soluble salts
使用淡水清洗表面以去除可溶性盐分。
- c. When the surface is dry, clean the steel by grinding to minimum St 3. The steel surface must be left with a uniform roughness
当表面干燥后，使用手动清洁工具打磨表面至 St 3. 处理后的表面应该是粗糙度均匀的。
- d. Remove all dust.
清洁灰尘。

2. Technical requirements for Paint Application

油漆施工的技术要求

- Paint application shall follow design of the paint system.

必须按照涂层设计，进行每一步施工。

- Everybody involved must read the painting procedure and the specification for each area and the product Datasheets and Application Instructions.

有关人员必须了解每个部位的油漆施工工艺及技术要求，油漆产品说明书及施工指导。

- The surface cleanliness and roughness should be inspected and approved before application.

油漆施工前，表面清洁度及粗糙度必须经过检查和验收。

- The atmospheric environments and relative humidity must meet the requirements stated in Hempel's Product Data Sheets during application. Record must be kept for future reference.

施工过程中的大气环境和相对湿度必须符合老人牌产品说明书的要求。并做好相应的记录，以备将来参考。

- Check the quality, batch numbers, shade numbers, quantity of the paint materials. For two pack paints, pay attention to mixing ratio, pot life and make sure to use the correct curing agent.

检查油漆包装、批号、色号数量。对于双组分油漆要注意混合比例，混合使用期及确认使用正确的固化剂。

- Winter Curing Agent might be used in Winter. Make sure to use the correct thinner and adjust the quantity of thinner according to temperature and relative humidity to adjust the viscosity to avoid dry-spray and sagging.

冬季可以使用冬用固化剂。确认使用正确的稀释剂，并根据温度及相对湿度调节稀释剂的加入量，来调整粘度来避免干喷及流挂。

- Observe the over-coating/recoating intervals stated in Hempel's product Data Sheets. 遵守老人牌产品说明书中的复涂及重涂间隔。

- For two-pack paints, mix of paint according to the amount of job to be done. Watch the pot life and mixing ratio.

对于双组份油漆，施工前根据使用量混合，并注意混合使用期及混合比例。

- Check and adjust the application equipment. before spraying. Wash the hoses and pumps with correct thinner immediately after use, especially for two-pack paints..

喷涂施工前，检查及调整施工设备。喷涂施工后，立即使用清洗管路及喷漆泵，尤其是双组分油漆。

- Stripe coat should be conducted before or after paint application.

油漆施工前后应该进行预涂。

- Store paint materials as per paint supplier required.

应该按照供货商要求进行油漆储存。

- Stir thoroughly before mixing two-pack paints.
双组分油漆混合前需要彻底搅拌。
- Control the Wet Film Thickness during application, so as to control DFT.
施工时进行湿膜厚度控制，以便于控制干膜厚度。
- Observe for defects like holidays/misses, sagging, pinholes, discoloration, uneven thickness. Rectify and repair if any defects found.
观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

3. Paint Application

油漆施工

- Check the temperature and relative humidity per hour, and calculate the DEW point. When the Steel Temperature isn't 3°C higher than the DEW Point, can't start the paint work or lower the humidity in the shop by de-humidity.
每小时检查空气温度及相对湿度，并计算露点。表面温度低于露点 3 度时，要求停止油漆施工或者进行车间内除湿。
- Preparation of Paint materials: prepare Base, Curing Agent, Thinner and record the batch numbers.
准备油漆材料：准备基料，固化剂，稀释剂并记录批号。
- Check the packing. If leakage is found, do not use unless approved by supplier representative. Check the material for jelling, discoloration. If abnormalities are found, do not use unless approved by supplier.
检查包装。如果包装发生破损，需要经过供货商代表认可才可以使用。检查材料是否有胶化变色等，如果有异常，需要经过供货商确认才可以使用。
- Strip coating: stripe coat on welding seams, inaccessible areas and awkward areas.
预涂：对焊缝，不容易施工的区域进行预涂施工。
- Spraying: Use suitable tips of sizes according to the Product Data Sheet.
喷涂：使用产品说明书推荐的枪嘴尺寸进行施工。
- Thickness control: Check the Wet Film Thickness with WFT comb & Dry Film Thickness with DFT gauge.
厚度控制：使用湿膜卡在施工时进行控制，油漆干燥后用干膜仪测量干膜厚度。
- Visual checking: Observe for defects like holidays/misses, sagging, pinholes,

discoloration, uneven thickness. Rectify and repair if any defects found.

目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

4. Paint Application procedure for outside of steel

碳钢外表面油漆施工工艺：

➤ Primer 1736G

底漆 1736G

- Checking the result of Surface Preparation, and preparing paint application.
检查表面处理结果，合格后准备油漆施工。

- Environment control: check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 85% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when environment does not meet the requirements, or lower the humidity in the shop by de-humidity.
环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于85%表面温度且表面温度必须高于露点三度。

- Preparation of Paint materials: prepare base 1736U-19830, curing agent 97043 and thinner 08450 and record the batch numbers.
油漆材料准备：准备基料 1736U-19830，固化剂 97043，稀释剂 08450 并记录批号。

- Mixing: mix the base 1736U-19830 and curing agent 97043 by the volume ratio of 8.5:1.5 with pneumatic stirrer. Add proper amount of thinner 08450 . Add the thinner only after curing agent is added and thoroughly stirred.
混合：用动力搅拌混合基料 1736U-19830 和固化剂 97043，按照体积比 8.5：1.5. 计入适当的稀释剂 08450，稀释剂应该在油漆混合搅拌彻底后加入。

- Strip coating: stripe coat welding seams, inaccessible areas and awkward areas.
预涂：对焊缝，不容易施工的区域进行预涂施工。

- Potlife:
注意，遵守混合使用期。
Refer to HEMPEL PDS for potlife.
混合使用期：请参阅 HEMPEL 产品说明书。

- Drying Time & Recoat Interval
干燥时间及重涂间隔

Consult HEMPEL for info. regarding Recoating interval and drying time.

重涂间隔请及时联系 HEMPEL 获取最近更新.

- **Thickness control:** During application, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 70um.
厚度控制：调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度。干膜厚度为 70 微米。
- **Visual checking:** Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.
目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时修复。

➤ **Intermediated coat 45880**
中间漆 45880

- **Make sure the Primer is free from defects and the result of sealer is OK. Check and confirm if Min&Max recoating interval is followed.**
确认底漆表面没有缺陷并结果良好。注意：遵守重涂间隔。
- **Environment control:** check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 80% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when environment does not meet the requirements, or lower the humidity in the shop by de-humidity.
环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于 80% 表面温度必须高于露点三度。环境条件达不到要求时，停止施工，或者车间内进行抽湿降低湿度。
- **Preparation of Paint materials:** prepare base 45889-12170, curing agent 95880 and thinner 08450 and record the batch numbers.
油漆材料准备：准备基料 45889-12170，固化剂 95880，稀释剂 08450 并记录批号。
- **Mixing:** mix the base 45889-12170 and curing agent 95880 by the volume ratio of 3:1 with pneumatic stirrer. Add proper amount of thinner 08450 . Add the thinner only after curing agent is added and thoroughly stirred.
混合：用动力搅拌混合基料 45889-12170 和固化剂 95880，按照体积比 3：1. 计入适当的稀释剂 08450，稀释剂应该在油漆混合搅拌彻底后加入。
- **Strip coating:** stripe coat welding seams, inaccessible areas and awkward areas.
预涂：对焊缝，不容易施工的区域进行预涂施工。
- **Potlife:**
混合使用期：

Refer to HEMPEL PDS for potlife.
请参阅 HEMPEL 产品说明书。

- **Drying Time & Recoat Interval**
干燥时间及重涂间隔
Consult HEMPEL for info. regarding Recoating interval and drying time.
重涂间隔请及时联系 HEMPEL 获取最近更新。
- **Thickness control:** During application check the wet film thickness regularly and calculate the DFT. If the WFT is too high or too low, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 125um.
厚度控制：施工时经常检查湿膜厚度，根据固体含量计算干膜厚度。如果湿膜厚度过高或者过低，调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度，规范要求干膜厚度为 125 微米。
- **Visual checking:** Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.
目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时修复。

➤ **Topcoat 55210**
面漆 55210

- **Make sure the intermediate coat is free from defects and the result is OK. Check and confirm if Min&Max recoating interval is followed.**
确认中漆表面没有缺陷后，注意：遵守重涂间隔！
- **Environment control:** check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 80% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when environment does not meet the requirements, or lower the humidity in the shop by de-humidity.
环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于 80% 表面温度必须高于露点三度。环境条件达不到要求时，停止施工，或者车间内进行抽湿降低湿度。
- **Preparation of Paint materials:** prepare base 55219-10170, curing agent 95370 and thinner 08080 and record the batch numbers.
油漆材料准备：准备基料 55219-10170，固化剂 95370，稀释剂 08080 并记录批号。
- **Mixing:** mix the base 55219-10170 and curing agent 95370 by the volume ratio of 7:1 with pneumatic stirrer. Add proper amount of thinner 08080. Add the thinner only after curing agent is added and thoroughly stirred.

混合：用动力搅拌混合基料 55219-10170 和固化剂 95370，按照体积比 7：1.计入适当的稀释剂 08080，稀释剂应该在油漆混合搅拌彻底后加入。

- **Strip coating: stripe coat welding seams, inaccessible areas and awkward areas.**
预涂：对焊缝，不容易施工的区域进行预涂施工。
- **Potlife:**
混合使用期：
Refer to HMP PDS for potlife information.
- **Thickness control: During application check the wet film thickness regularly and calculate the DFT. If the WFT is too high or too low, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 50um.**
厚度控制：施工时经常检查湿膜厚度，根据固体含量计算干膜厚度。如果湿膜厚度过高或者过低，调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度，规范要求干膜厚度为 50 微米。
- **Drying Time & Recoat Interval**
干燥时间及重涂间隔
Consult HEMPEL for info. regarding Recoating interval and drying time.
重涂间隔请及时联系 HEMPEL 获取最近更新.
- **Visual checking: Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.**
目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

5. Paint Application procedure for inside of steel

碳钢内表面油漆施工工艺：

➤ **Primer 1736G** **底漆 1736G**

- **Checking the result of Surface Preparation, and preparing paint application.**
检查表面处理结果，合格后准备油漆施工。
- **Environment control: check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 85% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when**

environment does not meet the requirements, or lower the humidity in the shop by de-humidity.

环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于85%表面温度且表面温度必须高于露点三度。

- Preparation of Paint materials: prepare base 1736U-19830, curing agent 97043 and thinner 08450 and record the batch numbers.

油漆材料准备：准备基料 1736U-19830，固化剂 97043，稀释剂 08450 并记录批号。

- Mixing: mix the base 1736U-19830 and curing agent 97043 by the volume ratio of 8.5:1.5 with pneumatic stirrer. Add proper amount of thinner 08450 . Add the thinner only after curing agent is added and thoroughly stirred.

混合：用动力搅拌混合基料 1736U-19830 和固化剂 97043，按照体积比 8.5： 1.5. 计入适当的稀释剂 08450，稀释剂应该在油漆混合搅拌彻底后加入。

- Strip coating: stripe coat welding seams, inaccessible areas and awkward areas.

预涂：对焊缝，不容易施工的区域进行预涂施工。

- Potlife:

注意，遵守混合使用期。

Refer to HEMPEL PDS for potlife.

混合使用期：请参阅 HEMPEL 产品说明书。

- Drying Time & Recoat Interval

干燥时间及重涂间隔

Consult HEMPEL for info. regarding Recoating interval and drying time.

重涂间隔请及时联系 HEMPEL 获取最近更新.

- Thickness control: During application, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 70um.

厚度控制：调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度。干膜厚度为 70 微米。

- Visual checking: Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.

目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

➤ Topcoat 55210

面漆 55210

- Make sure the primer coat is free from defects and the result is OK. Check and confirm if

Min&Max recoating interval is followed.

确认底漆表面没有缺陷，注意：遵守重涂间隔！

- **Environment control:** check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 80% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when environment does not meet the requirements, or lower the humidity in the shop by de-humidity.
环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于80%表面温度必须高于露点三度。环境条件达不到要求时，停止施工，或者车间内进行抽湿降低湿度。
- **Preparation of Paint materials:** prepare base 55219-10170, curing agent 95370 and thinner 08080 and record the batch numbers.
油漆材料准备：准备基料 55219-10170，固化剂 95370，稀释剂 08080 并记录批号。
- **Mixing:** mix the base 55219-10170 and curing agent 95370 by the volume ratio of 7:1 with pneumatic stirrer. Add proper amount of thinner 08080. Add the thinner only after curing agent is added and thoroughly stirred.
混合：用动力搅拌混合基料 55219-10170 和固化剂 95370，按照体积比 7: 1.计入适当的稀释剂 08080，稀释剂应该在油漆混合搅拌彻底后加入。
- **Strip coating:** stripe coat welding seams, inaccessible areas and awkward areas.
预涂：对焊缝，不容易施工的区域进行预涂施工。
- **Potlife:**
混合使用期：
Refer to HMP PDS for potlife information.
- **Thickness control:** During application check the wet film thickness regularly and calculate the DFT. If the WFT is too high or too low, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 50um.
厚度控制：施工时经常检查湿膜厚度，根据固体含量计算干膜厚度。如果湿膜厚度过高或者过低，调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度，规范要求干膜厚度为 50 微米。
- **Drying Time & Recoat Interval**
干燥时间及重涂间隔
Consult HEMPEL for info. regarding Recoating interval and drying time.
重涂间隔请及时联系 HEMPEL 获取最近更新。

- Visual checking: Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.
目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

6. Paint Application procedure for galvanized steel

镀锌件表面油漆施工工艺：

➤ Primer15553 底漆 15553

- Checking the result of Surface Preparation, and preparing paint application.
检查表面处理结果，合格后准备油漆施工。
- Environment control: check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 85% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when environment does not meet the requirements, or lower the humidity in the shop by de-humidity.
环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于85%表面温度必须高于露点三度。环境条件达不到要求时，停止施工，或者车间内进行抽湿降低湿度。
- Preparation of Paint materials: prepare base 15557-11630, curing agent 98021 and thinner 08450 and record the batch numbers.
油漆材料准备：准备基料 15557-11630，固化剂 98021，稀释剂 08450 并记录批号。
- Mixing: mix the base 15557-11630 and curing agent 980210 by the volume ratio of 3:1 with pneumatic stirrer. Add proper amount of thinner 08450 . Add the thinner only after curing agent is added and thoroughly stirred.
混合：用动力搅拌混合基料 15557-11630 和固化剂 98021，按照体积比 3：1.计入适当的稀释剂 08450，稀释剂应该在油漆混合搅拌彻底后加入。
- Strip coating: stripe coat welding seams, inaccessible areas and awkward areas.
预涂：对焊缝，不容易施工的区域进行预涂施工。
- 注意，遵守混合使用期。
- Potlife:
混合使用期：
Refer to HEMPEL PDS for potlife.
请参阅 HEMPEL 产品说明书。

- **Drying Time & Recoat Interval**
干燥时间及重涂间隔
Consult HEMPEL for info. regarding Recoating interval and drying time.
重涂间隔请及时联系 HEMPEL 获取最近更新。

- **Thickness control: During application, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 50um.**
厚度控制：调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度,规范要求干膜厚度为 50 微米。

- **Visual checking: Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.**
目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

- **Topcoat 55210**
面漆 55210

- **Make sure the primer coat is free from defects and the result is OK. Check and confirm if Min&Max recoating interval is followed.**
确认底漆表面没有缺陷，注意：遵守重涂间隔！

- **Environment control: check and record air temperature, relative humidity, surface temperature and paint material temperature. The RH must be below 80% and surface temperature must be 3 degrees Celsius above the dew point. Stop application when environment does not meet the requirements, or lower the humidity in the shop by de-humidity.**
环境控制：检查和记录空气温度、相对湿度、表面温度和油漆温度。湿度必须低于 80% 表面温度必须高于露点三度。环境条件达不到要求时，停止施工，或者车间内进行抽湿降低湿度。

- **Preparation of Paint materials: prepare base 55219-10170, curing agent 95370 and thinner 08080 and record the batch numbers.**
油漆材料准备：准备基料 55219-10170，固化剂 95370，稀释剂 08080 并记录批号。

- **Mixing: mix the base 55219-10170 and curing agent 95370 by the volume ratio of 7:1 with pneumatic stirrer. Add proper amount of thinner 08080. Add the thinner only after curing agent is added and thoroughly stirred.**
混合：用动力搅拌混合基料 55219-10170 和固化剂 95370，按照体积比 7：1 计入适当的稀释剂 08080，稀释剂应该在油漆混合搅拌彻底后加入。

- **Strip coating: stripe coat welding seams, inaccessible areas and awkward areas.**
预涂：对焊缝，不容易施工的区域进行预涂施工。

- **Potlife:**
混合使用期:
Refer to HMP PDS for potlife information.
- **Thickness control:** During application check the wet film thickness regularly and calculate the DFT. If the WFT is too high or too low, adjust spray speed or thinning ratio, until proper thickness is obtained. Check the DFT with DFT gauge when film is dry. The DFT is 50um.
厚度控制：施工时经常检查湿膜厚度，根据固体含量计算干膜厚度。如果湿膜厚度过高或者过低，调整喷漆速度或者稀释剂加入比例，直到获得合适的厚度。漆膜干燥后检测干膜厚度，规范要求干膜厚度为 50 微米。
- **Drying Time & Recoat Interval**
干燥时间及重涂间隔
Consult HEMPEL for info. regarding Recoating interval and drying time.
重涂间隔请及时联系 HEMPEL 获取最近更新。
- **Visual checking:** Check for misses, holidays, sagging, orange skin, pinholes etc. If the DFT is not up to specification, spray one more coat.
目测检查：观察到露底，流挂，针孔，颜色不均，厚度不匀等缺陷，及时进行修复。

7. Calibration of DFT Gauge:

干膜仪校准

Dry film thickness gauges shall be calibrated for the thickness range to be checked at least twice per working shift, using foils in the film thickness range being checked and over the type of surface prepared in the same manner as that which is coated.

干膜测厚仪每班至少校正两次，使用在要求膜厚范围内标准垫片。

7. Remark:

备注:

Ral9010 equivalent to Hempel colour code 10170

Application the different colour coat according to the customer requirement.

Ral9010 对应海虹色号 10170

根据客户的要求施工不同颜色的油漆。