KINCROME®

PROFESSIONAL QUALITY TOOLS

# PLASTICS WELDING KIT




**K15353**

# PLASTICS WELDING KIT

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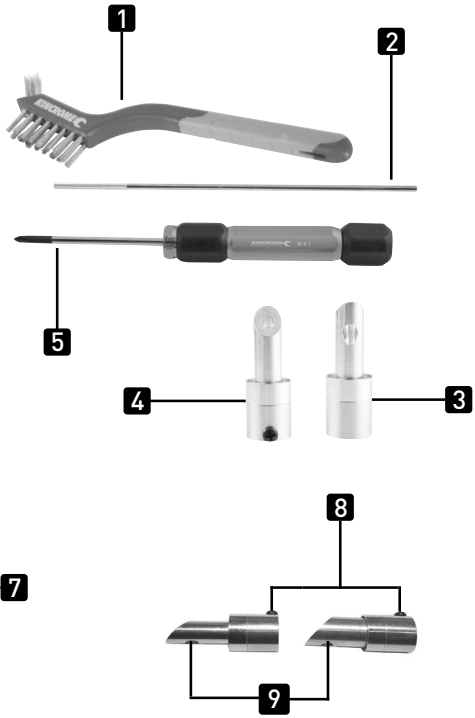
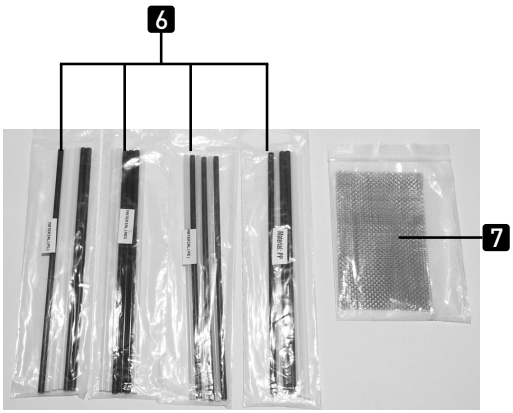
## Know Your Product

1. Wire Brush
2. Tip Cleaning Rod
3. 12mm Welding Tip
4. 9mm Welding Tip
5. PH#1 Phillips Screwdriver
6. Welding Rods
7. Welding Mesh
8. Welding Tip Retaining Screw
9. Welding Rod Feeder Hole




## Specifications

Model No: ..... .....K15353
Plastic Welding Rods Length (3 Pcs Black & 3 Pcs White) ..... .....170mm X 4mm Ø
PE (Polyethylene) Melting Temperature.....70-75 °C
PS (Polystyrene) Melting Temperature.....95 °C
PP (Polypropylene) Melting Temperature .....140 °C
ABS (Acrylonitrile Butadiene Styrene) Melting Temperature..... .....117 °C
Stainless Steel Reinforcing Mesh Dimensions (3 Pcs).....100mm X 60mm

## GENERAL SAFETY WARNINGS

**Note:** The below safety instructions are applicable to the use of the K15350 gas soldering iron.
K15350 gas soldering iron is not supplied in the K15353 Plastics Welding kit & must be purchased separately.

Read and follow operating instructions and warnings and familiarize yourself with the gas soldering iron before lighting or using. Review instructions and warnings periodically to maintain awareness.

**WARNING:** This tool must be placed on its folding stand when not in use.

a. Do not leave the appliance unattended when it is switched ON.
b. This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
c. Children should be supervised to ensure that they do not play with the appliance.
d. Extremely flammable contents under pressure. Do not expose the torch or fuel to temperatures exceeding 45ºC or prolonged sunlight.
e. Maintain good ventilation.
f. Always wear goggles and protective gloves and use proper tools to handle hot work.
g. Never breathe in welding/soldering fumes.
h. Do not puncture or incinerate.
i. Never attempt to modify the torch construction, use unapproved accessories or fuels or attempt to repair a damaged torch.
j. Do not drop the gas soldering iron as the unit might be damaged and ceramic could be broken.
k. Follow refilling procedure to avoid serious accidents.
l. Do not ignite the torch near to the face, hands, clothing or inflammable materials.
m. Please note the butane flame may be barely visible in certain light conditions.
n. Place the appliance on its stand after use and allow it to cool down before storage;
o. Allow the gas soldering iron to cool down before storage.
p. Ensure flame extinguished and gas OFF after each use.
q. Never attempt to use the gas soldering iron as a cigarette lighter.
r. Be extra careful when using the gas soldering iron outdoors on sunny or windy days.
s. Wind may carry the torch's heat back toward you or other areas not intended to be heated.
t. Never use the gas soldering iron to remove lead-based paint indoors or in any confined area.
u. Always check to make sure no intended parts or materials are being heated.
v. Whenever there is a possibility that unintended material has been heated, wait at least two hours before leaving the area.
w. Be especially careful to avoid fumes from cadmium, plating and galvanized metal.
x. Beware that the gas soldering iron tip and accessories get hot during use.
y. Be sure not pointed in a direction which would cause nearby objects to ignite.
z. Always have a fire extinguisher and a bucket of water near the gas soldering iron and work area
aa. Do not use water to cool down the gas soldering iron; it will damage the product.
ab. The container requires to be stored and/or transported in an upright position.
ac. The warnings, cautions and instructions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and cautions are factors which cannot be\ built into this product, but must be supplied by the operator.

## Description of Symbols For Soldering and Plastics Welding Kit Operation

| | | | |
|---|---|---|---|
|  | Read the instruction manual before use. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. |  | Risk of Explosion |
|  | Wear Respitory Protection |  | Wear Eye Protection |
|  | Wear Safety Gloves | | |

KINCROME PROFESSIONAL QUALITY TOOLS

# PLASTICS WELDING KIT

## What Can be Plastic Welded Or Plastic Repaired?

The K15353 Plastics Welding Kit can help avoid the need to pay for costly repairs on: automotive, marine, motorcycle products such as bumpers, headlight fixings, moldings, farings etc. You can also use the Plastics Welding kit to repair: Leisure products, toys, household items and almost anything made from a plastic material, as long as the plastic is made from any of the 4 material types included in the kit.

## UNPACKING

a. Unpack all the components from the box.
b. When unpacking the K15353 Plastics Welding Kit, carefully inspect for any damage that may have occurred during transit.
c. Check for loose, missing or damaged parts.
d. Ensure all packaging materials are disposed of as per your local council guide lines.
e. This Plastics Welding Kit is suitable for use with the K15350, K15351 gas soldering irons or other gas soldering iron kits.

## Identifying Plastics Which You Can Weld or Repair

When attempting to repair any damaged or broken plastic items, the key factor is to know the material type. The material type will affect the repair process and method you choose. Thermoplastic and thermoset materials are entirely different from each other, thermosets cannot be welded, but most types of thermoplastics can be welded or repaired. Sometimes it is as easy to identify the plastic material you are wanting to weld or trying to repair by looking for the plastics material identification symbol as shown below in the table. MOST plastic products have only one of the below symbols on them to easily identify what plastic material type you may be working with.
Look for one of the below material identification symbols on your plastic material to identify what plastic welding repair material that will be needed to weld or repair your job at hand.

| | 1 PETE | 2 HDPE | 3 PVC | 4 LDPE | 5 PP | 6 PS | 7 ABS |
|---|---|---|---|---|---|---|---|
| **Properties** | • Clarity<br>• Strength<br>• Toughness<br>• Barrier To Gas & Moisture<br>• Solvent Resistant | • Stiff<br>• Strength<br>• Toughness<br>• Resistant To Chemicals & Moisture<br>• Semi-Flexible<br>• Waxy Surface<br>• Opaque Finish | • Versatility<br>• Clarity<br>• Toughness<br>• Strength<br>• Semi-Flexible | • Translucent<br>• Soft<br>• Toughness<br>• Strength<br>• Flexible<br>• Waxy Surface<br>• Barrier To Moisture | • Strength<br>• Toughness<br>• Flexible<br>• Waxy Surface<br>• Translucent<br>• Resistance To Heat, Chemicals, Grease & Oil.<br>• Barrier To Moisture | • Clarity<br>• Versatile<br>• Glassy<br>• Semi Tough<br>• | • Hard<br>• Toughness<br>• Impact Resistant<br>• Electrical Insulation Properties |
| **Softens at °C** | 80°C | 75°C | 80°C | 70°C | 140°C | 95°C | 117°C |
| **Common Uses** | • Soft Drink & Water Bottles<br>• Biscuit Trays<br>• Containers | • Plastic Crates<br>• Agricultural Pipes<br>• Fuel Tanks<br>• Detergent Bottles | • Plumbing Pipes & Fittings<br>• Roof Sheeting<br>• Garden Hoses<br>• Wall Cladding | •Irrigation Tubing<br>• Bottles<br>• Plastic Bags<br>• Containers | • Microwave Dishes<br>• Kettles & Other Appliances<br>• Garden Furniture<br>• Storage Tubs | • CD Cases<br>• Plastic Cutlery<br>• Imitation Glassware<br>• Hobbies & Models<br>• Brittle Toys | • Automotive Compenents<br>• Appliance Components<br>• Power Tool Housing<br>• Computers & Electronics<br>• Musical Instruments |

**What if there is no material identification logo on the plastic?**
If there is no symbol shown on your plastic material, then you will need to do one of the following tests to help identify the plastic material in hand.

# PLASTICS WELDING KIT

**Note:** The below information is a guide only and should help confirm the material, however as some materials can be blended together in the manufacturing process you may need to seek professional advise if you are unable to verify your material type. (Any costs associated in the identification of your plastic material, will not covered by Kincrome). If possible, keep samples of plastic materials that you already know to compare with the unknown plastic you are trying to weld or repair.

**Warning:** Some of the following tests may require the use of a flame. Always ensure that you use appropriate PPE safety equipment & conduct any testing in an appropriate area.

**Float Test**

Fill a container with clear water (the water should be around room temperature). Cut small pieces of the plastic you want to test, and add the plastic samples to the water and observe the behaviour of the materials. In most instances ONLY plastic HDPE, LDPE & PP materials will float, All other plastics will normally sink.

**Burn Test**

This method is one of the most accurate tests you can do by yourself. Different plastic material reacts differently when burning. For this test you should have prior knowledge as to how different types of plastics behave and smell while burning. burning. Visit the Kincrome website kincrome.com.au , type in the product code for the plastics welding kit K15353, then in the downloads section you will find a chart to assist you in identifying a plastic material using the burn test method.

**Warning:** Go to an open area with fresh air and ensure that you observe all safety requirements, then ensure that you have a large enough sample of the material you want to burn test to avoid any potential burn hazard. Always make sure that there is nothing on the ground under where you are burn testing the plastic to reduce the risk of a fire in or around your work area. Avoid breathing in any smoke produced by the burn/flame test. Ensure all safety PPE is used during this test method.

Use either the K15350 Kincrome gas soldering iron (not supplied) or a cigarette lighter (NOT matches), ignite your plastic material sample & observe the reaction.
You need to pay attention as you are looking to identify flame or no flame, colour of flame, carbon above the flame, etc.
Take note of the odour the burning plastic omits as this also can assist you in identifying the material type, **but be very careful of doing so as the fumes omitted from burning plastics can be toxic.**

Then once you have extinguished the flame, try to identify the plastic material type by utilizing the following information,

- Plastics that ignite quite quickly and 'drip molten flaming plastic' are usually-
- Low-density polyethylene (PE-LD).
- Linear low-density polyethylene 4 (PE-LLD).
- High-density polyethylene 2 (PE-HD).
- Polypropylene 5 (PP).
- PET plastic generally ignites easily , however normally produced bubbles while melting.
- PVC (3) & ABS (7) will generally ignite but will show signs of softening/drooping without dripping molten plastic.

**Flame/Smell Test**

- PE-LD, PE-LLD (4), PE-HD (2) & Nylon plastics should produce a Blue flame/Yellow tip, smokes, and smells like candle (paraffin).
- PP (5) should produce a Blue flame/Yellow flame, drips, and smells diesel fuel/paraffin like.
- PVC (3) should produce a Yellow flame/Green tip at initial contact with the flame and small like chlorine.

**Warning:** This smoke is very toxic so extreme caution is needed around this smoke.

- PET or PC (7) should generally omit a full Yellow flame / full body black smoke and smell like burnt sugar.
- PS (6) or ABS (7) should generate a full Yellow flame, soot like smoke and smell like styrene/burning rubber. (soot like smoke normally can leave black residue on any material placed above the smoke during testing)

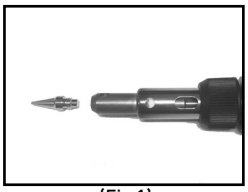
**Feel Test**

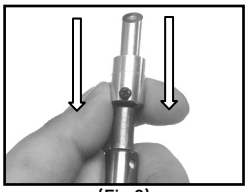
This test though not very accurate, can help to give you an insight in to what plastic you might be working with.
Some plastics like ABS or PVC are harder and some are softer like PE and PP. Usually PP & PE can be marked with your thumb nail whereas ABS & PVC cannot.

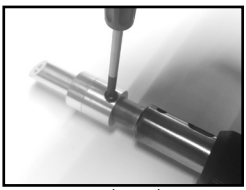
## ASSEMBLY OF THE WELDING TOOL

**Note:** A gas soldering Iron is not included within this kit. K15350 and K15351 Kincrome gas soldering irons can be puschased separately from your local Kincrome stockist.

1. Remove the soldering tip from the soldering tip assembly on the gas soldering iron (fig1).
2. Select the appropriate welding tip- 9mm (5) or 12mm (4) for the task at hand.
3. Using the supplied PH#1 Phillips Screwdriver (6), loosen the welding tip retaining screw (9) on the welding tip by rotating anti-clockwise, then slide over the gas soldering iron soldering tip (fig 2).
4. Align the retaining screw with the under-side of the soldering irons folding stand, making sure the retaining screw does NOT enter the exhaust port as this will leave the welding tip loose.
5. Retighten the phillips welding tip retaining screw (9) by rotating clockwise to secure the chosen welding tip to the gas soldering iron (Fig 3).


(Fig 1)


(Fig 2)


(Fig 3)

## OPERATION - PLASTIC WELDING OR REPAIRS

**Option 1 - Using the Welding Tip**

1. Ensure that you have identified the correct plastic material you are wanting to weld or repair as instructed in Identifying Plastics Which You Can Weld or Repair on page 4.

⚠ Warning: Take care when operating the plastic welding operation, as both the soldering iron, welding tips & plastic materials will become very hot during use.

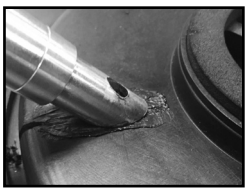
2. Turn ON the gas soldering iron (as per gas soldering iron instructions) to begin heating the welding tip in preparation for welding.
3. Use the supplied wire brush (1) to clean the plastic surface in preparation for any plastic welding or repair materials to be applied. Preparation of the surface is a critical step of the process, as contaminated or unclean surfaces can result in an un-successful weld or unsightly weld or repair finishes.

**Note:** The temperature required to plastic weld will vary depending on the plastic materials melting temperature. Before you begin welding the actual job at hand, it is advised to conduct some preliminary weld testing on a scrap piece of the material you are trying to weld or repair. This way you can get the tip temperature correct to ensure that you don't cause any unnecessary damage to your finished plastic product. Adjust the temperature of the soldering iron according to its instruction manual.

4. Once you have adjusted the soldering irons gas flow to achieve the best tip temperature for your welding or repair job, place the surface of the welding tip onto your plastic surface where the repair is needed (Fig 4a).

5a. Move the heated welding tip smoothly & evenly over the section to be welded, melting and flowing the plastic from both sides of the join/crack (Fig 4a).

5b. If addition plastic is required to fill a gap or add strength to the weld, insert the relevant plastic welding rod into the welding rod feeder hole (10) and apply gentle pressure (fig 4b).


(Fig 4a)


(Fig 4b)

6. The welding rod will begin to soften, allowing both materials to fuse together to become one.

**Note:** Only apply enough pressure to the plastic rod that will allow both plastics to melt together correctly at about the same temperature. If you push the welding rod excessively, the soldering tip will not be able to melt the welding rod enough, and this could create a dry joint. A dry joint would not be considered 'structural' as both of the plastic materials have not melted together correctly to become one.

7. Once the desired weld or repair has been completed, you can use the hot welding tip (5 or 6) as a smoothing tool to flatten or shape the plastic into the desired shape.
8. When your welding or repair job is complete, turn OFF the gas soldering iron (as per gas soldering iron instructions) and allow all parts of the project and gas soldering iron to cool down fully before changing tips, performing maintenance or packing them away into the cases EVA tray.

**Note:** Thermoplastics may be heated & cooled multiple times, so don't be afraid to start/stop your welding or repair operation at any time.

**Option 2 - Using the Soldering Irons Blower Output**

You can also plastic weld using hot air produced by the gas soldering irons blower feature.

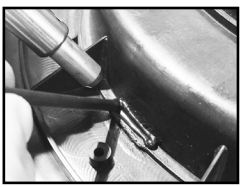
1. Below instructions based on fully assembled soldering iron.
2. Remove the SOLDER TIP from the SOLDERING TIP ASSEMBLY by rotating the SOLDER TIP counter-clockwise.
3. Gas soldering iron is now ready for hot air blower operation and can be used to plastic weld.
4. Use the supplied wire brush (1) to clean the plastic surface in preparation for any plastic welding or repair materials to be applied. Preparation of the surface is a critical step of the process, as contaminated or unclean surfaces can result in an un-successful weld or unsightly weld or repair finishes.
5. Using the correct plastic material for your weld or repair, rest the applicable plastic welding rod on the area where you want to weld or repair, then using the hot air from the soldering irons blower output to heat both the welding rod & plastic surface.
6. With both plastic materials heated to the same temperature and in a pliable state, feed the plastic welding rod to create the desired weld or repair ensuring to continually heat both plastic materials at the same time (Fig 5).
7. Once the desired weld or repair has been completed, you can attach the welding tip (4 or 5) onto the soldering iron and use the tip as a smoothing tool to flatten or shape the plastic into the desired shape.
8. When your welding or repair job is complete, turn OFF the gas soldering iron (as per gas soldering iron instructions) and allow all parts of the project or gas soldering iron to cool down fully before changing tips, performing maintenance or packing them away into the cases EVA tray.

**Plastic Repairs Using the Reinforcing Mesh**

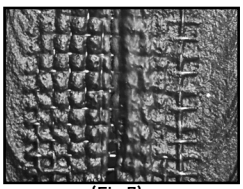
⚠ Warning: Take care when operating the plastic welding operation, as both the soldering iron, welding tips & plastic materials will become very hot during use.

The K15353 Plastics Welding Kit is supplied with 3 sheets of stainless steel reinforcing mesh, that can be used to reinforce larger repairs such as cracks, holes or deep gouges in your project. The stainless steel reinforcing mesh sheets can be cut, shaped or moulded into almost any shape to suit your repair needs. If cutting of the reinforcing mesh is required, always ensure that your use a cutting tool that is designed for cuttings stainless steel materials to avoid any damage to your cutting tool (eg tin snips NOT kitchen scissors).

1. Use the supplied wire brush (1) to clean the plastic surface in preparation for any plastic welding or repair materials to be applied. Preparation of the surface is a critical step of the process, as contaminated or unclean surfaces can result in an un-successful weld or unsightly weld or repair finishes.
2. Cut the reinforcing mesh sheet into the appropriate size suitable for your repair requirements. Always ensure to cut the welding mesh approx. 20-30% larger in size to the crack, hole or gouge size you are trying to repair, this enabling enough support of the mesh when melted into the plastic.
3. Using the appropriate welding tip (4 or 5) for your repair needs, turn ON the gas soldering iron (as per gas soldering iron instructions) and preheat the welding tip in preparation for your plastic repair.
4. Pre-heat the plastic area where you will apply the stainless steel reinforcing mesh until soft & pliable, then apply the reinforcing mesh to the area. Press the mesh into the soft plastic using the welding tip (Fig 6).
5. With the reinforcing mesh set in its location, use the welding tip to continue to heat the mesh so that the remaining mesh can be melted and be pressed into the surrounding plastic (Fig 7).
6. With the reinforcing mesh set into the correct location, you can use the welding tip to smooth the surrounding plastic or use the correct supplied filler rods to add additional plastic material to end up with a smooth repaired finish. If needed use additional tools & sandpaper (not supplied) to adjust or finish the surface to the desired look.


(Fig 5)


(Fig 6)


(Fig 7)

**Plastic Repairs Using the Reinforcing Mesh (Continued)**

7. Always ensure that there is enough plastic material covering the reinforcing mesh as insufficient plastic material in or around the repair patch, can lead to premature repair failure.
8. When your repair job is complete, turn OFF the gas soldering iron (as per gas soldering iron instructions) and allow all parts of the project or gas soldering iron to cool down fully before changing tips, performing maintenance or packing them away into the cases EVA tray.

## CLEANING & MAINTENANCE

1. In the event that the welding tips welding rod feeder hole (10) becomes clogged with plastic material, use the supplied TIP CLEANING ROD (2) to clean & remove the plastic material by inserting the rod into the rod feeder hole (10) and passing the rod back & forth until the hole is clear of debris.
2. Any plastic debris that needs to be cleared or removed for the welding tip face, can be done by using either a knife blade, file or sandpaper (not supplied) to remove the debris as needed.

⚠ WARNING! Never use solvents or other harsh chemicals for cleaning any parts of the tool. These chemicals may weaken the plastic materials used in these parts. Use a cloth dampened only with water and mild soap. Never let any liquid get inside the tool; never immerse any part of the tool into a liquid.

## STORAGE

a. Ensure that all Welding Tips have cooled off before storing back into the supplied protective case.
b. Store K15353 components and accessories in the protective case.

## SPARE PARTS

For a full list of available spare parts for this item visit the Kincrome website kincrome com.au or alternatively contact Kincrome Customer Service.

## RELATED PRODUCTS AND CONSUMABLE ACCESSORIES

- K15350 - INDEXING HEAD SOLDERING IRON KIT
- KP15003 - PLASTIC WELDING RODS 12PCS ABS (6pcs each Black & White)
- KP15004 - PLASTIC WELDING RODS 12PCS PE (6pcs each Black & White)
- KP15005 - PLASTIC WELDING RODS 12PCS PP (6pcs each Black & White)
- KP15006 - PLASTIC WELDING RODS 12PCS PS (6pcs each Black & White)
- KP15007 - WELD REINFORCING MESH 3PCS SS SS (100mm x 60mm)

## SERVICE

Have your product serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety, reliability and performance of the gas soldering iron kit is maintained.

## OFFICE CONTACT DETAILS

**Phone:** 1300 657 528

**Fax:** 1300 556 005

**Email:** enquiries@kincrome.com.au

**Website:** www.kincrome.com.au

## CARING FOR THE ENVIRONMENT



When a tool is no longer usable it should not be disposed of with household waste, but in an environmentally friendly way. Please recycle where facilities exist. Check with your local council authority for recycling advice.



Recycling packaging reduces the need for landfill and raw materials. Reuse of recycled material decreases pollution in the environment. Please recycle packaging where facilities exist. Check with your local council authority for
recycling advice.

**Notes:**

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