valspar
INDUSTRIAL MIX

EMEAI Valspar bv
Zuiveringweg 89
8243 PE Lelystad
The Netherlands
Tel. +31 (0) 320292200

www.valsparindustrialmix.com

Technical Information Sheet

General Information: Spray Procedure TI – G 7 / UK

The choice of the application system depends on several points:

- **Object**
  The size and the shape of the component
  Quality requirements
- **Legislation**
  VOC or other local rules
- **Paint system**
  Material e.g. Primer or Topcoat.
  Material e.g. Structure, Texture, highly fluid, viscous.
- **Sprayer (Painter)**
  Speed of work
  Work habits

Overview of the "normal" spray application tools		
Procedure	**Pressure**	**Atomisation**
Extreme pressure (Without air support)	Material pressure 100-250 bar (<550 bar)	Hydraulic atomization through material pressure
Extreme pressure (With air support)	Material pressure 20-150 bar	Hydraulic atomization through material pressure and air suppport
Electrostatic (Extreme and high pressure)	Material pressure ~ 3-50 bar	Hydraulic atomization and/or pneumatic air support
High pressure	Material pressure 3-10 bar	pneumatic atomization through air support
Optimizes high pressure	Material pressure 2-2,5 bar	pneumatic atomization through air support
Low pressure („HVLP" „LVLP")	Material pressure max. 0,7 bar	pneumatic atomization through air support

Other Manufacturer designation for:

Extreme pressure without air support: Airless
Extreme pressure with air support: Airmix, Air-Coat, Spraymix, Air-Combi, Airless-Plus….

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Low pressure application:

In the HVLP air spray process (High Volume Low Pressure, i.e. high air volume at low pressure), the coating material is sprayed with low air pressure (anywhere from 0.2 bar to 0.7 bar) and a high air volume. The HVLP requires an air flow of about 400-800 l/min (in some cases up to 2000 l/min), which is produced by a compressor or a turbine.
The LVLP air spraying process (Low Volume Low Pressure), a further development of the HVLP process, requires significantly smaller airflow volumes. In relation to the HVLP process, the air volume with LVPL can be reduced by nearly 40%.

High pressure application:

The high-pressure spraying - The coating/paint material is sprayed with an air pressure of 2-10 bar depending on the method. The required amount of air is between 300-500 l/min, and the air is usually generated by a compressor. The transfer rate is set at 35-65% according to the application The adjustable spray gun is perfect for the use of low-viscosity media. The use of high-viscosity media, however, is rather limited. Another feature is the fine atomization and excellent surface quality.

High Pressure application is available as:

- Gravity flow cup or suction spray gun
- Pressure-fed spray gun with pressure tank as material feeding (air/paint material via hoses)
- Pressure-fed spray gun with pneumatic pump as material feeding (air/paintmaterial via hoses)
- Automatic spray devices with pressure tank or pneumatic pump

Extreme pressure application:

Airless spray comprises "high pressure and low pressure spraying." The fluid pressure is usually between 100 to 250 bar but also up to 550 bar is possible. The coating medium with the use of spray pressure and spray apparatus is pressed through a die measuring 0.18 to 1.65 mm and producing a finely atomized spray pattern. The benefits are: lower media consumption as compared to compressed air spraying, high working rates, fast finishes in large areas and less overspray across from other spraying. Viscosity materials can be easily processed and can be applied in thick layers with a single layer. With Spraymix or Airmix spraying (air-supported airless spraying) the coating medium is atomized at a lower bar pressure of 20-150 bar. The airless spray pattern is supported with air from 0.5 till 2.0 bar pressure and is thereby "softer". The risk of edge banding is reduced.
Both systems are designed for the use with large objects. Small objects can be processed to a limited extent only.

Electrostatic application:

The electrostatic coating method uses a use of high voltage field of 20 - 150kV. This requires a pump or a pressure vessel plus a control unit converting the alternating current into direct current and low voltage via a cable from 3V to 12V to the high voltage generator in the electrostatic spray gun. The integrated electronic system in the control unit clears the electrical voltage to the gun only when the trigger is pulled to release the atomizing air to the gun. Conditions to be considered are the electrical surface resistance of the component itself and the electrical conductivity of the paint. The paint's electrical resistance shall be at least 5MΩ.cm. Non-conductive coating materials can be applied, however the transfer efficiency is significantly lower. The paint droplets are negatively charged by the high voltage electrostatic spray gun and they move along the electrostatic field lines to the positively charged or grounded component surface.

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Where possible, the workpiece is moved to create a generally uniform coating surface. Advantages of this method is the low loss of paint material and no overspray, time savings as well as the briefer cleaning intervals of the spraying tools. The uniform coating has a thickness between 60-80µm.
Special precautions must be taken with the electrostatic application of waterborne paints.

Usual application facts:
For more detailed information refer to the manufacturer's instructions!

	Spray distance	**Input pressure**	**Atomisation pressure**	**Transmission rate**
HVLP/LVLP	10-15 cm / 4"– 6"	max. 2 bar / 29 psi	0,7 bar / 10 psi	> 65%
Optimizes high pressure	18-23 cm / 6"– 8"	2,2 bar / 32 psi	1,8 bar / 26 psi	> 65%
High pressure	25 cm / 10"	max. 5 bar / 72 psi	4,5 bar / 65 psi	~ 35-40%
Extreme pressure with air support	10-23 cm / 4"- 8"	max.8 bar / 116 psi	**Air support** 0,5 -2,5 bar **Material pressure** 20 – 150 bar	~ 70-75%
Extreme pressure without air support	20-30 cm / 7"– 12"	--	**Material pressure** 100 – 250 bar	~ 60-70%
Electrostatic (depending on the system)	20-50 cm / 7"– 18"	Depending oft he procedure	Depending oft he procedure	~ 80-90%

Furthermore consider the Manufactor information and instructions to avoid application mistakes.