

"Stainweld" USS CR-M1 18-8 "Rezistal"

Silica (SiO₂)..... 11.0%..... 19.6% 10.0%
 Calcium Fluoride (CaF₂)..... 40.5%..... 11.4% 23.4%
 Oxides of Iron, Aluminum and Nickel. 30.2%..... 52.1% 36.6%

The following is an interesting comparison between the compositions of dust formed when using bare mild steel electrodes and when using coated electrodes for welding galvanized steel:

Brand	Bare Electrodes		Coated Electrodes	
	% ZnO	% Fe ₂ O ₃	% ZnO	% Fe ₂ O ₃
"Fleetweld"	79.2	20.0	67.5	31.9
"Wilson"	62.6	60.5	78.8	21.5
"Murex"	60.5	40.0	72.0	28.0

Investigations have shown that there may be as much as a five per cent. variation in composition of dust produced by the same make and kind of electrode when used under constant conditions but by different operators.

Ferric oxide (Fe₂O₃) which emanates from all welding arcs, regardless of the type of coating, is disagreeable but not harmful. Concentrations of iron oxide of about ten milligrams per cubic meter are said to be entirely non-injurious to the respiratory organs.

Breathing the dense clouds of fumes of zinc oxide, formed when the zinc of the galvanized coating is boiled off by the heat of the welding arc, causes what is commonly known as "fume fever". This is evidenced by nausea followed by chills and unpleasant fever. The fume fever does no lasting harm except after prolonged exposure, and the effects are not cumulative. Ordinary ventilation, which is necessary in any welding operation, is considered adequate to prevent fume fever.

What Is The Amount And What Are The Characteristics of Dust Produced By The Various Electric Arc Welding Operations? There is a wide variation in the amount and character of dust produced by different types of rods on different materials under different operating conditions.

FUME, OR DUST PRODUCED BY ARC WELDING

Material Being Welded	Electrode Used	Size of Electrode	Particles Per cu. ft.	Characteristics of Dust Particles. (Sizes and Percentages Estimated)
Rivets inside Cross Coil Drum.	G-E W-20 Coated	5/32"	20,050,560	About 98% angular crystalline, 5 microns or less in size; 2% rounded semi-opaque, 10 microns or more in size.
Mild Steel Blanks Inside Booth.	G-E W-20 Coated	5/32"	14,839,680	About 80% round black or reddish brown specks, 1 microns or less in size; 20% slightly angular crystalline, 10 microns or less but mostly about 5 microns and large number reddish brown specks too small and numerous to count.